RAILROAD GAZETTE

FRIDAY, JANUARY 12.

Contributions.

Rail Inspection.

NEW YORK, Jan. 8, 1883.

TO THE EDITOR OF THE RAILROAD GAZETTE:

A rigid inspection of rails and the material they are made of is a safeguard against many accidents to trainmen and to the public generally. Rails made of iron or steel should be inspected by competent mechanical engineers. According to specifications rails should be of full weight, straight, well drilled, free from flaws, and a rigid test, physical and chemical, ought to follow.

I lately listened to a controversy between scientific gentlemen, one of whom considers himself so highly learned in science (mineralogy, metallurgy, etc.), who said: "A first or an inferior class of pig iron can be used in the manufacture of steel with success." Permit me to say that the simple truth is, disguise it as they may, that the art of steel-making ever was and is yet imperfect, in both the old and new World. Whatever known process is employed, impure steel results from the use of impure iron, and high-class steel from high-class iron, and from that cause alone and not from the skill of manufacturers.

That is a fact I could show by the irrefragible proofs afforded by the daily practice of the whole cast-steel trade; for the want of scientific knowledge in this manufacture is so well known and so self evident as to distinguish it in a marked degree from the more highly developed manufacturing processes of the present day. The cause of it would be at once apparent if I were to draw a comparison between this manufacture and other metallurgical processes which are conducted on purely scientific principles.

I also venture to put the question, in reference to steel-making: "What else can be done?" There is no known process (and I doubt if there ever will be a true one) that will give to common or worthless pig-metal the qualities required to make first-class steel; so if we, for our own safety, want a reliable quality of steel, a high class of pig iron must be used.

A PRACTICAL MINERALOGIST AND METALLURGIST.

Reduction of Operating Expenses in Wheel Service.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The purpose of the articles written and published in your issues of Feb. 24 and Aug. 25, 1882, on "Wheel Service, has been to impart correct information as to the absolute facts relating to the relation of life and cost, the advantages and disadvantages and practical results obtained from the use of steel-tire and cast-iron wheels, coming under the knowledge of the writer, without discriminating in favor of any particular steel-tire wheel, although the figures shown from necessity have been derived from records kept of wheels made by a single manufacturer, and all facts presented have been based upon the service of this particular wheel, they having been in use with us years before the trial of any other make have come to renewal, and thereby offered a chance to submit results of service, while other makes have not reached renewals sufficient to establish an actual average service.

In treating this subject heretofore, the maker's name has been withheld, for obvious considerations, the object being simply to the proof of the advantage in the use of steel tired wheels where the facts have shown it. But now that different kinds of steel-tired wheels are in service with claims which ought to be considered, and the facts and what is actually known of the various kinds should be stated.

From facts within reach I am perhaps able to conjecture nearly, what the result of the wear of some of these wheels will be that have not already come to renewal. Conditions growing out of the publication of the figures referred to lead to the conclusion that it is right for those most deeply concerned (the railroads) to know exactly what are the results obtained from wheels made by the various manufacturers, and not leave any one in doubt as to which wheels are referred to in the statements made, thus bring the wheel-makers to a clear sense of the importance of always keeping their wheels up to a high standard. In what manner each shall sustain himself depends upon the quality of the material used and the way in which the work is done. In view of the importance of this matter something should be said in this connection, now that results are more clearly defined, to present the subject in a just and fair way.

The wheels giving the results referred to, in the articles mentioned, were the Hartford steel-tired wheels. A statement is given below of comparative cost to railroads of cast-iron and steel-tired wheels, based on the actual life of the Hartford wheel, it is assumed in this statement, for comparison, that the Allen paper and the English (Patent Shaft & Axletree Co.'s) wheels are capable of making the same mileage as the Hartford.

For the ten months ending Nov. 1, 1882, there have been taken out on this road 83 Hartford steel tired wheels worn out. Their actual average mileage has been 225,001 miles and the actual average time in service has been 2,572 days, or 7 years, 17 days.

For the year ending Oct. 1, 1882, we have removed 58 cast-iron wheels, and the actual average mileage has been 29,074 miles.

To make 225,001 miles, the life of the steel-tire wheel, it will require 7.738+ cast-iron wheels, and the time in service to make 29,075 miles would be 332 days.

The value placed upon the wheels is of course approximate cost.

The result in dollars and cents is as follows:

	Wheels.			
	33-in. 7.738+ pair Cast iron.	33-in. One pair Hartford. Steel.	42-in. One pair English. Steel.	42-in. One pair Allen paper. Steel.
Value	$216.66	$100.00	$130.00	$180.00
Cost of fittings, etc	15.47	4.50	4.50	4.50
Interest	42.07	53.39	68.91	94.71
Total	$274.20	$277.89	$203.41	$278 21
Value of old wheels	103.61	18.75	20.80	20.80
Total cost to run 225,001 miles	$170.59	$139.14	$182.61	$258.41

The 83 Hartford steel-tired wheels referred to above were 33 in., and their actual average mileage before first turning has been 90,838 miles.

A 42-in. wheel of the same quality, in consequence of the greater wearing surface, would make before first turning 115,605 miles.

We have removed 52 42 in. Allen paper wheels, and their actual average mileage before first turning has been 101,649 miles.

Many of these wheels had crucible steel-tires.

Sixteen 33-in. Allen paper wheels were removed, and their actual average mileage before first turning has been 56,806 miles.

The service of the Allen paper car wheel, coming under my observation, as submitted above, indicates a comparatively short life, measured by comparative cost. The tires are generally too soft to realize the hopes entertained for them through the representations coming to us of their astonishing mileage.

The larger proportion of these wheels now being put in service have tires of steel, made comparatively soft by the open-hearth process, and it is contended that it is unsafe to use any but soft steel, owing to the pressure to be sustained. This seems a singular claim to make when it is an unquestioned fact that the best quality of crucible steel properly carbonized has a tensile strength much greater than it is possible to produce by the open-hearth process. Actual facts demonstrate the great advantage of crucible steel tires for locomotive driving-wheels, where they have done such admirable service.

Inferior stock will not give the best mileage. Open-hearth steel tires flatten; crucible steel tires never under any reasonable usage. We must yield to facts finally.

We have removed six 42 in. English wheels, and their actual average mileage before first turning has been 30,351 miles.

We believe the final average will go considerably above these figures, as the present condition of the wheels now in service indicate considerable wear before coming to first turning, but like the paper wheel they are inclined to be soft, giving the impression that the mileage will not be very large, but final results will tell.

Methods of construction have much to do with wear and tear. Different roads give different results owing to this fact.

The difference in circumstances and conditions, which every change in construction makes, is a matter little considered by ordinary men, and is a problem, the details of which may be considered with profit. In the application of new devices the question should be, does the result reached justify the cost.

That the wheels of a moving train in revolving produce a similar effect upon the rail as the blows of a hammer is conceded by those who have made this question a study. Now, the striking force of a moving body being as the square of its velocity, we can appreciate in some measure what the destruction force upon the wearing parts of a railroad train must be as the rate of speed is increased. This is preliminary to the question we desire to bring out. It will be noticed that the past year the actual average mileage of our cast-iron wheels show quite a reduction from previous years in 1880, for 184 wheels, 56,540 miles; 1881, for 127 wheels, 34,290 miles; 1882, for 58 wheels, 20,074 miles.

Now, it is evident that certain causes are operating to bring about these results, and from my observation I am led to the conclusion that the automatic brake being applied on our road some year and a half ago has much to do with reducing the mileage of our wheels. Its greater power has been availed of to stop our trains under greater speed, with less loss of time, and in a shorter space, producing its effect as indicated in wheel mileage. It would not be very singular, however, if the cast-iron wheels by repeated re-melting had lost some of their wearing qualities.

It is more and more becoming evident that skill in the mechanical branch of railroad service is important to obtain the best results.

Between the various manufacturers of hammered and rolled steel-tire wheels, providing they all use the same quality of steel, I can see no difference as to safety and wear. The question then is reduced to dollars and cents.

NEW ENGLAND.

[What will strike most readers who are familiar with this subject on reading the above communication is the very low average mileage reported of both the cast-iron and the steel-tired wheels. In fact, the service of all the wheels reported is much lower than it is ordinarily supposed to be, even on a road with heavy grades and sharp curves. On the Pennsylvania Railroad, for example, cast-iron wheels, under a very rigid inspection, are making an average mileage more than 20 per cent. greater than that reported by our correspondent. Pullman's Palace Car Company reports the service of "the paper wheels we have of between two and three thousand miles," and Mr. Geo. Hackney, of the Atchison, Topeka & Santa Fe Railroad, reports that the paper wheels under the sleeper "Granada" have run 286,710 miles, and that "they will run some time yet without turning."

The great difficulty in estimating the relative value of the different kinds of wheels is to get the *average service of all wheels removed.* When wheels fail from any cause sooner than those who use them think they should, they imitate Rip Van Winkle and "don't count this time." The only correct way to determine the question is to count the mileage of all wheels which fail and *which a company must pay for.* The question of the relative cost of service of cast-iron and steel-tired wheels seems to be still an open one, and will probably remain so until reports from records which have been carefully kept from six to ten years are obtainable.

The following paper or criticism on the wheel report made to the last convention of the Master Car-Builders' Association may be of interest in this connection.—EDITOR RAILROAD GAZETTE.]

Steel versus Cast-Iron Wheels.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Referring to the appendix to the report of the Master Car-Builders' Association of the comparative merits of steel and iron car wheels, published in your issue of November, 1882, there are several facts presented as to the cost of cast-iron wheels that are hardly correct.

As this is a most important matter, both for the railway companies and the manufacturers of cast iron wheels, we submit the cost of a sufficient number of cast-iron wheels to equal the mileage claimed for a steel-tired wheel.

The figures here presented are based on the prices and mileage guarantees that are in ordinary use among railway companies.

The following extract is from the report of the committee appointed by the Master Car-Builders' Association to investigate the subject, and shows the cost of 4.4 pairs cast-iron wheels as against one pair steel-tired wheels:

Copy of report to Master Car-Builders' Association.

"The actual average mileage of the steel-tired wheels has been 220,021 miles. Now we will assume the average mileage of the cast-iron wheels to be 50,000 miles. To make 220,021 miles (the life of a steel wheel) it will require 4.4 cast-iron wheels, and the time in service to make 50,000 miles would be 571 days.

	One pair steel wheels.	4.4 pair iron wheels.
Value	$100.00	$123.20
Cost of fitting, etc	4 50	8.80
Interest	50.16	26.87
Total	$154.66	$158.87
Value of old wheels	18.75	58,92
	$135.91	$99.95

"The actual average, however, of cast-iron wheels on Boston & Albany road has been 34,290 miles, the comparative results being as follows:

	One pair steel wheels.	6.416 pairs iron wheels.
Value	$100.00	$179.65
Cost of fitting, etc	4.50	12.83
Interest	51.00	35.03
Total	$155.50	$227.51
Value of old wheels	18.75	85.91
	$136.75	$141.60"

The first and most important error is the mileage assumed for cast-iron wheels, viz., 50,000 miles. Some makers may guarantee their 33-in. wheels for only 50,000 miles, but any maker of first-class wheels is ready to and does in all cases guarantee 60,000 miles. Railroad companies have never had any difficulty in purchasing wheels guaranteed for that mileage when they buy in the open market. Taking then 60,000 miles as the basis, we find that 3.66 pairs of cast-iron wheels will equal the 220,021 miles claimed for the steel-tired wheel.

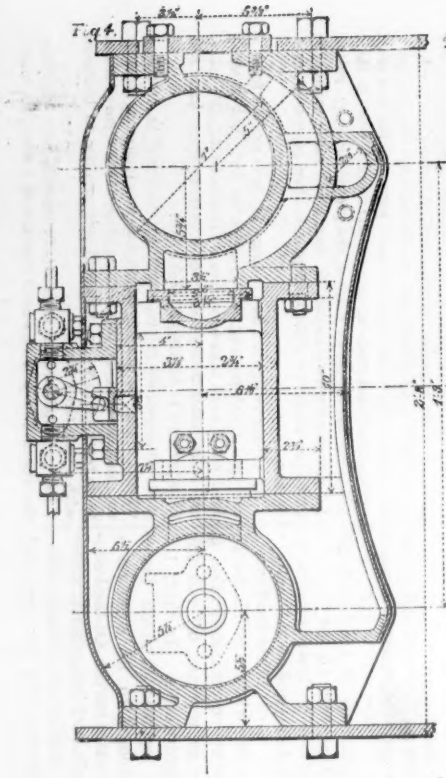
2d. The prices at which new cast wheels are estimated on report of committee, viz.: $14 each, would suit the manufacturers of them very well if they could get it; but as $12 each is considerably nearer, and in many cases above the actual cost of such wheels, we will use the latter figures.

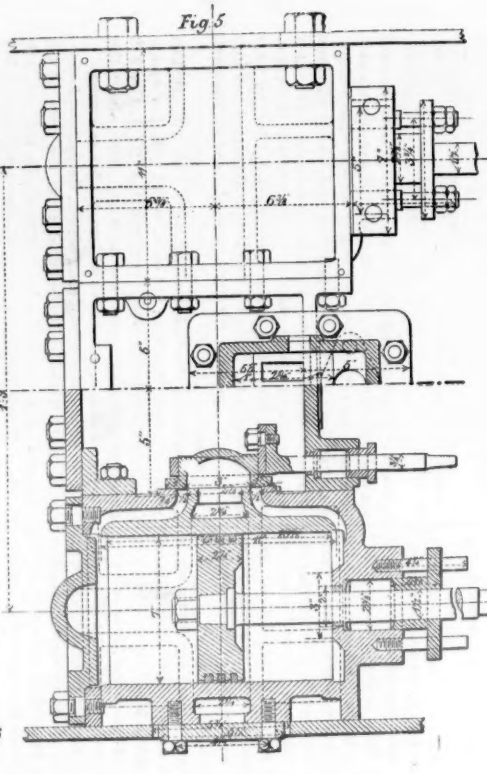
3d. In buying one pair of steel wheels, the interest and investment of $100 is fairly computed from the date of the purchase. In the case of 4.4 cast-iron wheels, but one pair of wheels is purchased, and when, at the expiration of 571 days (or when worn out per Master Car-Builder's report), a second pair is purchased, all of the railways that we know of use their worn-out wheels in part payment for new ones, so that the actual cash expense for the second pair is their full value less the scrap value of the preceding pair; rating 4.4 pair scrap wheels at $58.92, their scrap value would be $6.70 per wheel, or $13.40 per pair. (Per report of committee).

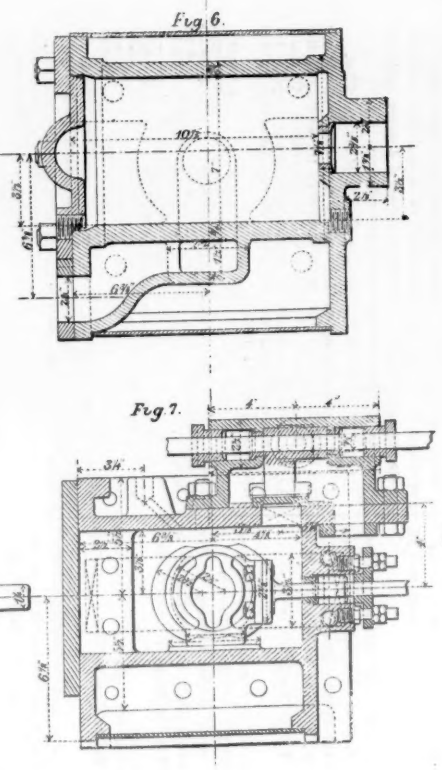
By the above figures, and rating 571 days as the life of a cast-iron wheel, making 50,000 miles, we find that a steel-tired wheel must take seven years to make its 220,021 miles, and on the 60,000 miles basis the 3.66 pairs must take 685 days per pair in making 60,000 miles.

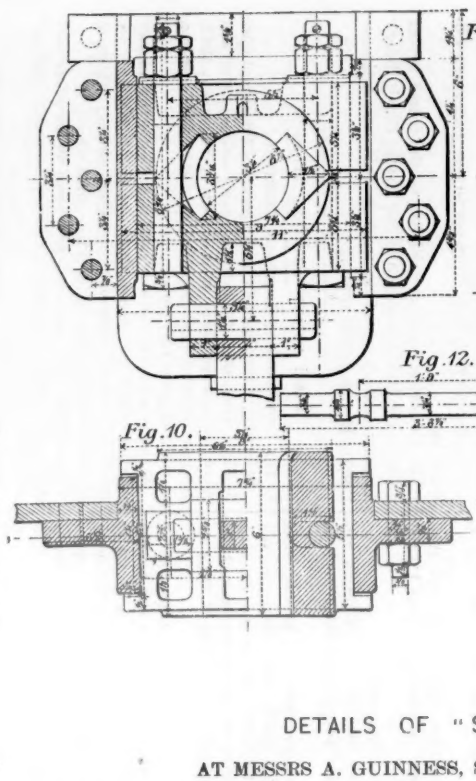
In computing the interest on the investment in cast-iron wheels, it must be done from the date at which each individual purchase is made, to the completion of the term of seven years required to wear out a sufficient number to compare with a steel-tired wheel.

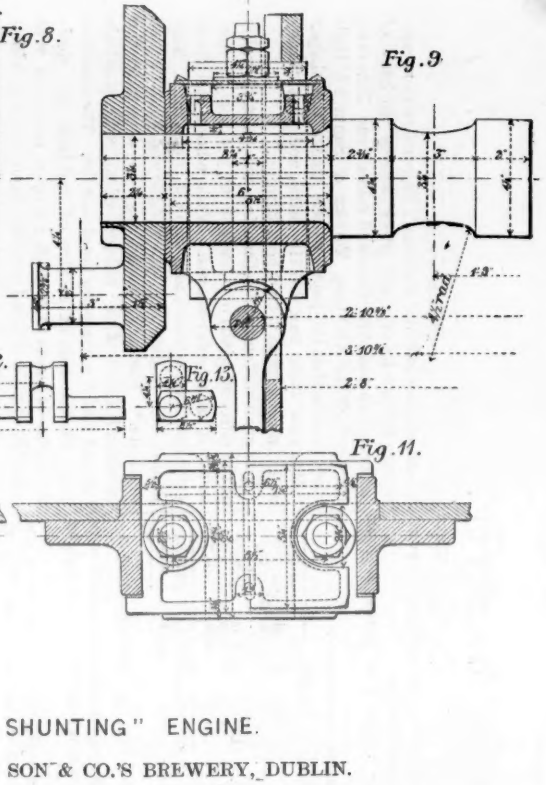
Having explained the matter fully we will now compute the cost of 3.66 pair of wheels guaranteed for 60,000 miles,

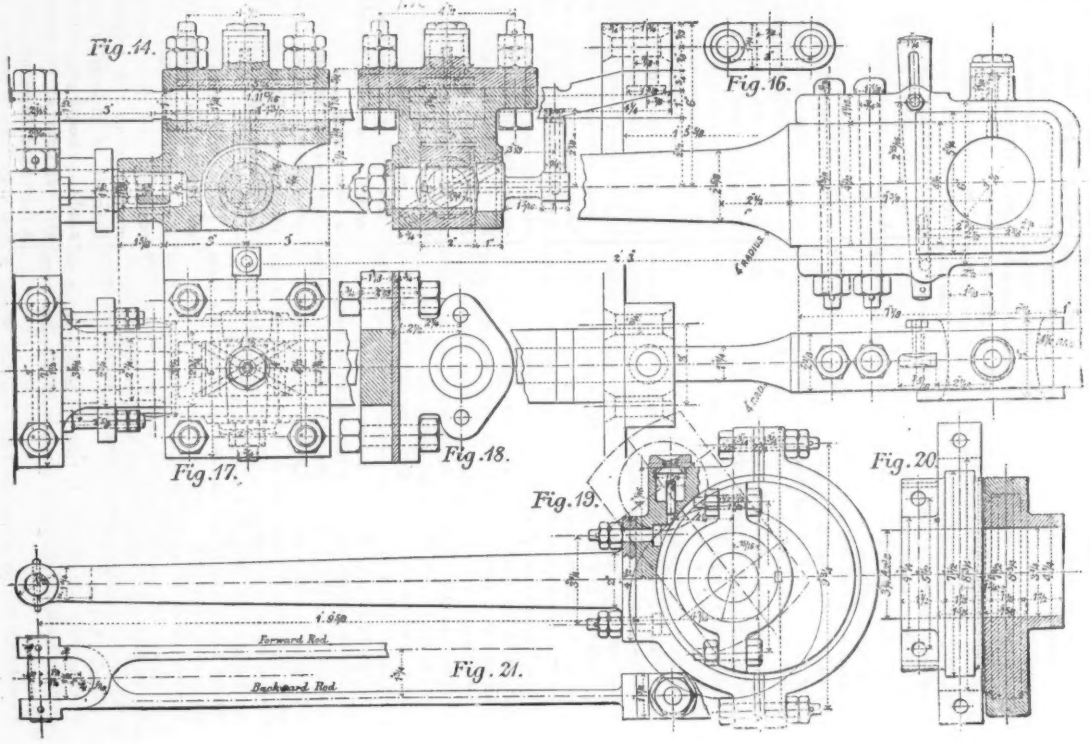


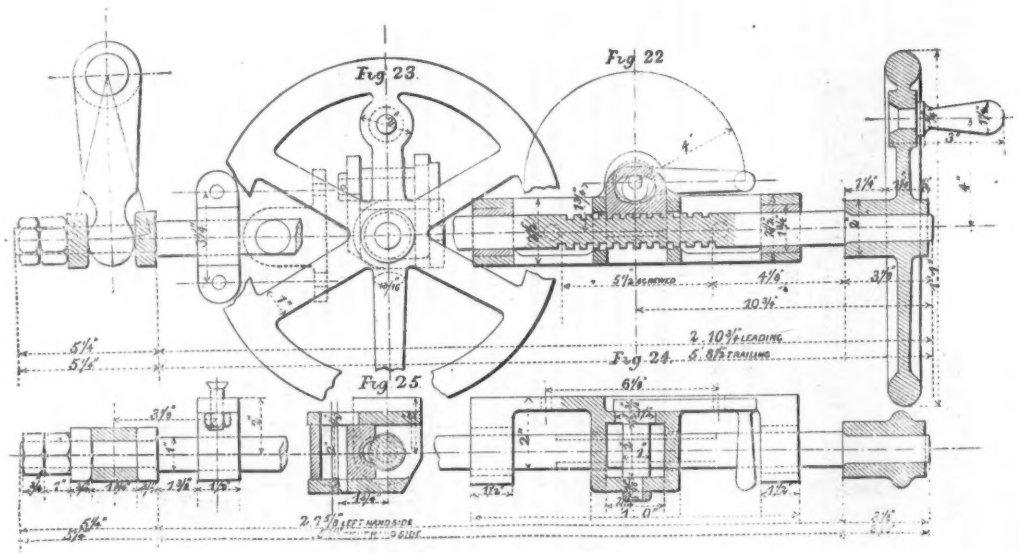










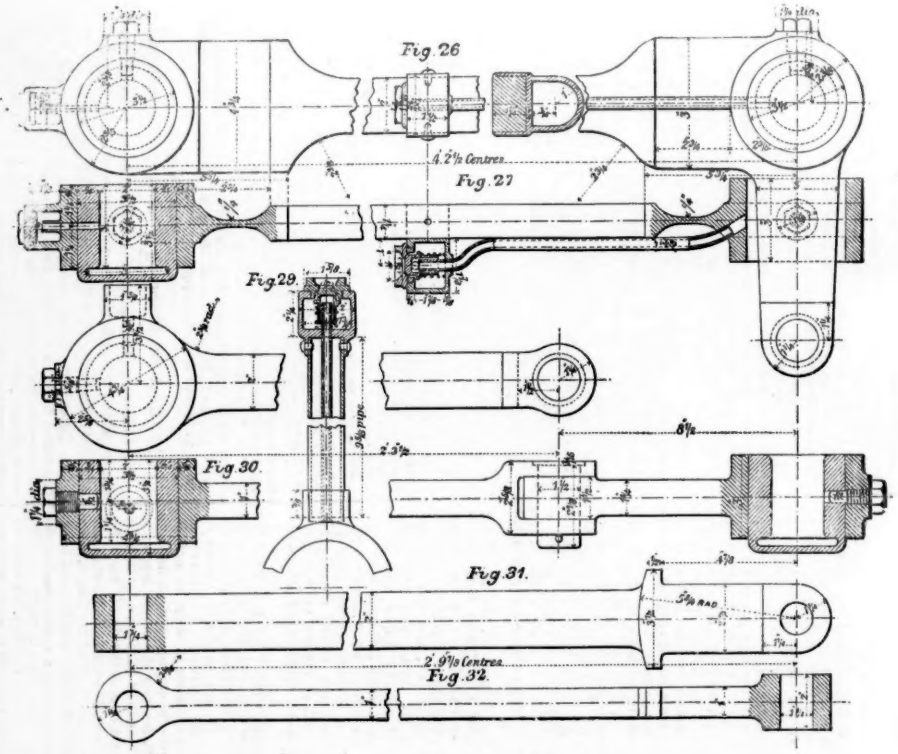


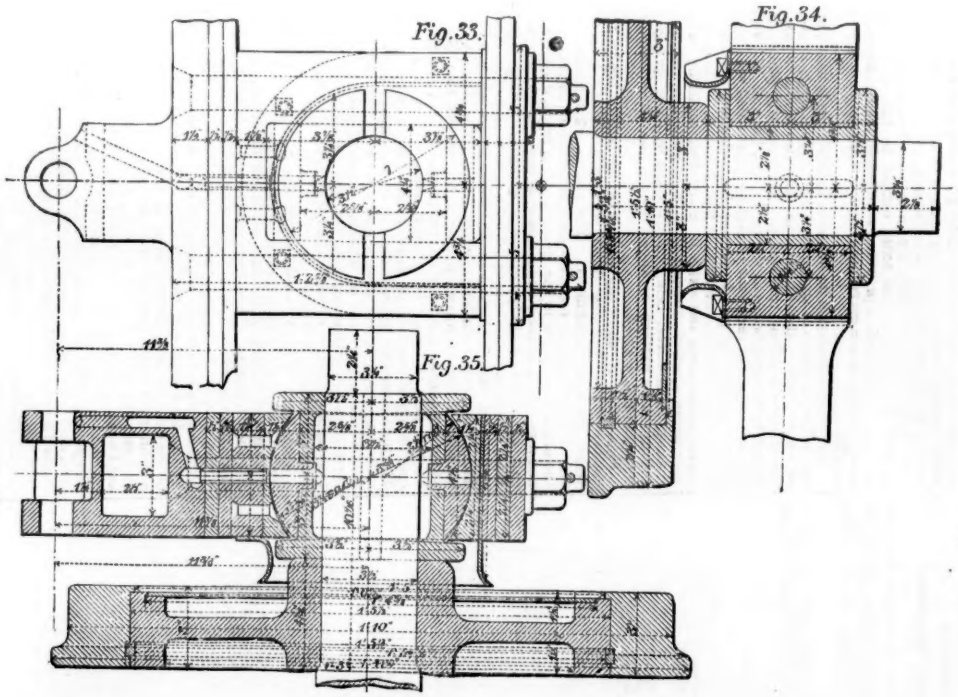
DETAILS OF "SHUNTING" ENGINE.

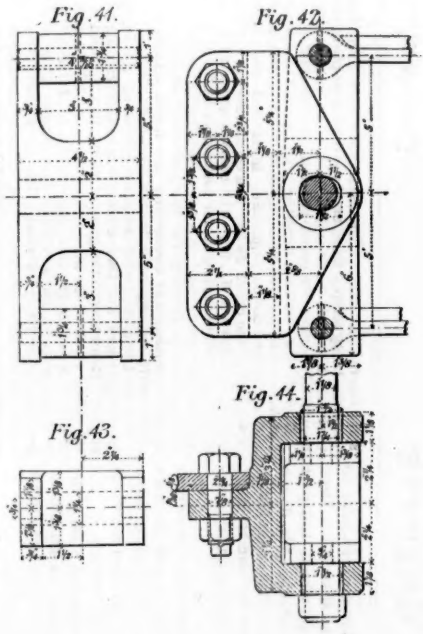
AT MESSRS A. GUINNESS, SON & CO.'S BREWERY, DUBLIN.

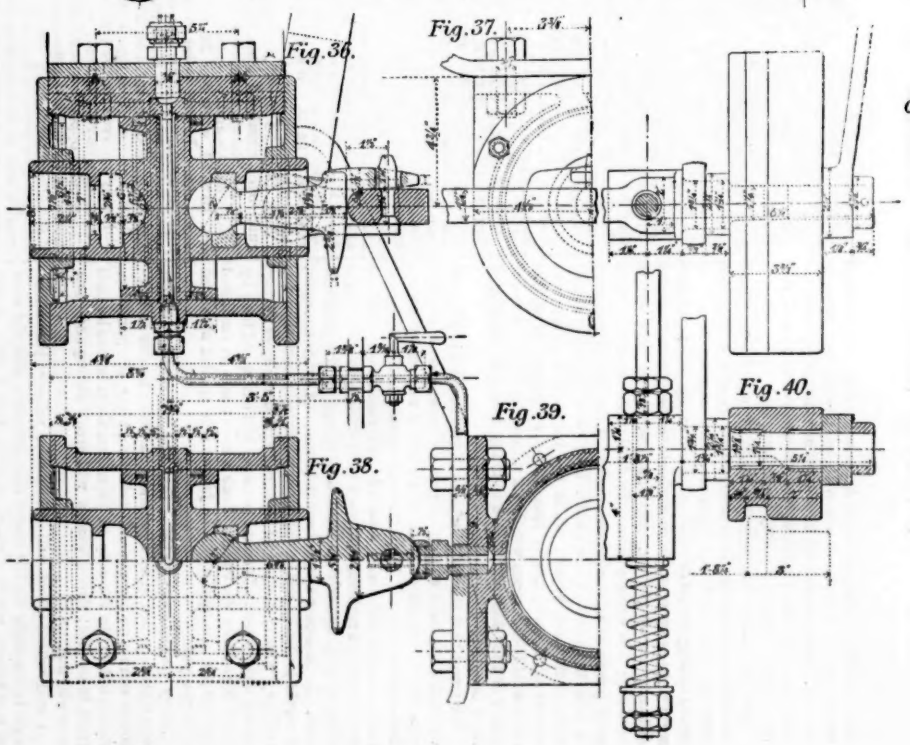
Constructed by the AVONSIDE ENGINE CO., LIMITED. *From the designs of* MR. S. GEOGHEGAN.

(For Description, see page 20.)









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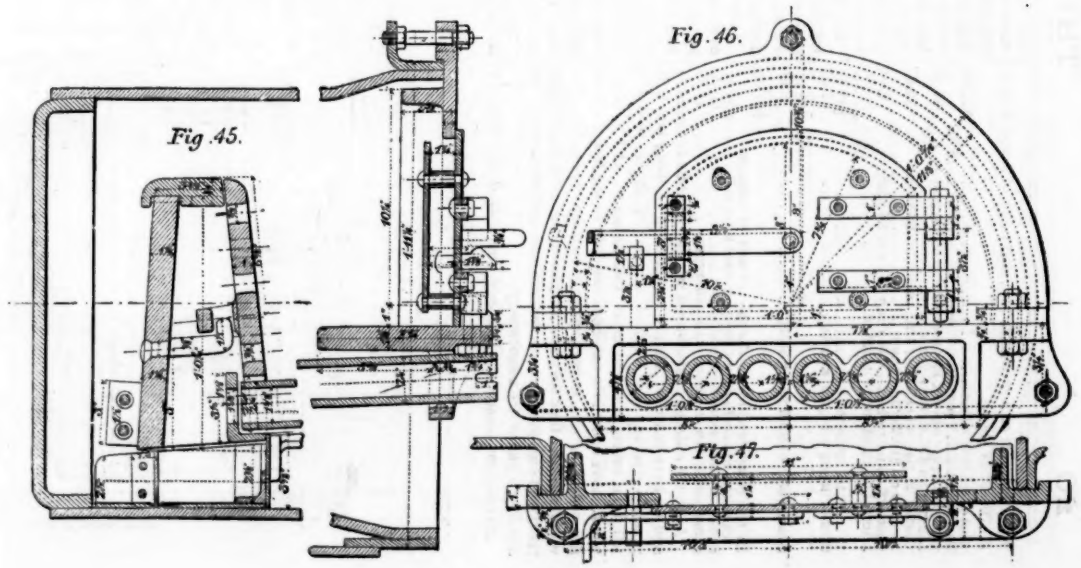


with the price of new wheels $12, and price of scrap wheels $6.70, all as above.

Cost of 1st pair wheels		$24.00
Interest on $24, 7 per cent. 7 years	11.75	
Cost of 2d pair wheels, less scrap value of 1st pair.		10.60
Interest on $10.60 for 5 years	3.70	
Cost of 3d pair wheels, less scrap value of 2d pair.		10.60
Interest on $10.60 for 3 years	2.23	
Cost of 0.66 pair wheels, less scrap value of 3d pair.		2.44
Interest on $2.44 for 15 months	.22	
Total interest		$17.90
Cost of fitting 3.66 pair wheels		7.32
		$72.86
Scrap value of 0.66 pair wheels		8.84
		$64.02
By this computation we make the net cost of enough cast iron wheels to off-set one pair steel-tired ones		$64.02
Same per Master Car-Builders' report		89.65
Same per Boston & Albany Railroad report		141.60

As to the mileage of steel-tired wheels, 220,021 is claimed, and we have heard of claims far exceeding that; but will practice give any such result? As shown above, a wheel will take seven years to make that mileage, and as steel wheels have come into extended use only in the last four or five years, there should accordingly be none worn out yet; we understand that they are not guaranteed, the sellers and purchasers seeming to have such implicit faith in them as to consider a guarantee unnecessary.

Has anyone bought steel wheels guaranteed for 220,021 miles, and have there been no failures? Have all the steel wheels used run seven years without having the tires re-turned? There appears to have been no calculation made for such expenses, and we think that the users of them will find they exist and form a pretty large item, too.

There are many things developed in the use of steel wheels of which mention should be made to arrive at a comparison with the cast wheel; for instance, they can be flatted by brake sliding and have to be re-turned every time; they also seem to be as open as the cast wheels to the greatest source of loss in car wheels, viz., sharp flanges, and the only way to save then is to re-turn them. To do this, the users of them must purchase expensive machinery; if the actual expenses of using them are all computed, they will be fully double those of the cast wheels, while the permanent investment will at all times be nearly four times as great. It makes considerable difference whether a railroad company has one dollar or four dollars invested in doing a certain portion of their business.

We grant that the safest wheels should be used in all cases where life depends, without regard to cost; but is it fully established that the average steel wheel is any safer than a first-class iron one? Have the cast wheels had the opportunity to give their best results? We think not. Let us suppose that a railroad company were willing to spend some of the surplus cash now given for steel wheels on first-class cast ones. In that case a wheel could be made of extra strength; it would probably weigh one hundred pounds more than the ordinary wheel; it could be balanced and trued up as perfect as any steel wheel. It could be tested and examined both by the seller and by the buyer. Such wheels could be furnished for $30 per pair, and would be just as safe as steel wheels at $100 per pair.

Many people seem to think that there is no way to test cast wheels except in service, and that their merits and demerits cannot be ascertained until long after the purchase. This is not so; let the user of them test them before he puts them in service; strong wheels will break strong and poor ones will not.

A well-chilled wheel will give a good mileage (due allowance being made for the causes that interfere with the wear of any wheel, whether steel or iron), and a poor chilled wheel will not. The great trouble cast-iron wheels have to contend with is that they are all judged alike, when there is as much difference between good cast wheels and poor ones as there is between steel and iron wheels. We do not hear much of failures in steel wheels, but if the users of them will look into the number purchased and the number they have in use at present, we think they will have quite a number to account for.

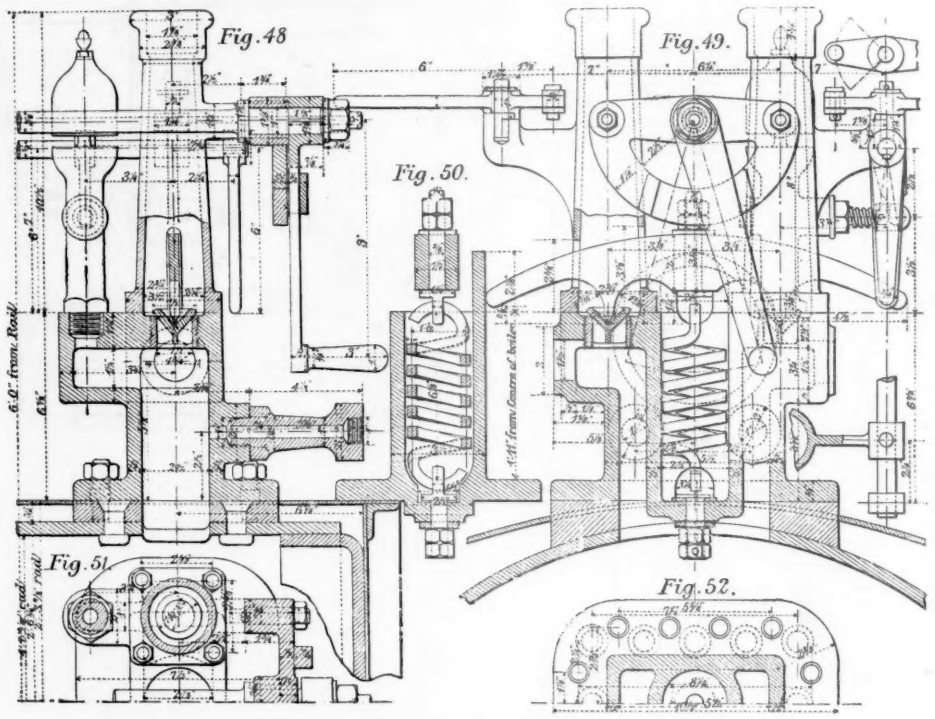
Let them investigate the cost of the labor spent in re-turning and the machinery that is required and get at the facts generally. It is quite important for railroad people to know whether an investment of $400 per car for steel wheels is necessary instead of $96 per car for the cast wheels.

It may be said that in reducing the estimated price of the new cast wheels, that of the scrap wheels should also be lowered, but the prices of $6.70 for scrap wheels and $12 for new wheels are such as can be readily obtained.

Narrow-Gauge "Shunting" Engines.

We are indebted to *Engineering* for the engravings and following description of this interesting engine which has some very novel features of construction. In describing this engine *Engineering* said:

We illustrate this week, in considerable detail, an interesting little locomotive constructed by the Avonside Engine Co., from the designs of Mr. S. Geoghegan, for service at Messrs. A. Guinness, Son & Co.'s brewery, Dublin, to which establishment Mr. Geoghegan is the engineer. Referring first to the general views, figs. 1, 2 and 3, (published last week) it will be seen that the engine has several special features which have been patented by Mr. Geoghegan. Thus in the first place it will be seen that the engine has four coupled wheels, the crank pins of the hind wheels being connected by vertical coupling rods to overhung cranes at the end of a crankshaft placed across the top of the boilers. The cylinders are also placed on the top of the boiler, the connecting rods being coupled to inside cranks on the crank-shaft just mentioned.



DETAILS OF NARROW-GAUGE "SHUNTING" ENGINE.

The cylinders are 7 in. in diameter with 8½ in. stroke, and they are shown in detail by figs. 4, 5, 6 and 7, figs. 4 and 7 also showing the regulator which is placed on the top of the valve chest. The slide valves are circular valves, while the cylinder ports are of the form shown in the last-named figure. The cylinders are bolted between side plates or frames ⅝ in. thick, which extend down on each side of the boiler and are connected by cross-stays above and below the latter, as shown in figs. 1, 2 and 3.

The crank-shaft is shown in figs. 12 and 13, and the crank-shaft bearings in figs. 8, 9, 10 and 11. These bearings, or upper axle-boxes as they may be called, are of gun-metal, and each is made in four parts, the upper and lower parts of each box being bolted together as shown, and the side portions which receive the fore and aft thrust and pull of the connecting rod being clipped between the upper and lower parts. These upper axle-boxes are fitted into cast-iron rubbing pieces bolted to the main frames as shown, each upper axle-box having at its lower side a double-eye, by means of which it is connected to a vertical link which couples it to the corresponding lower axle-box, as shown on the right hand side of fig. 3. We shall have more to say respecting this arrangement hereafter.

Figs. 14 to 18 of our two-page engraving represent the guide-bars, crosshead and connecting rod, the details being so clearly shown that no verbal description is necessary. The eccentrics and eccentric rods are similarly shown by figs. 19 to 21, while figs. 22 to 25 represent the reversing screw, etc. In this latter arrangement it will be noticed that the reversing screw is made to engage with a half-nut which can be raised at pleasure, leaving the screw free to be directly pushed or pulled backwards or forwards by hand.

As will be seen from figs. 1 and 3, and the detail view fig. 9 already referred to, the crank-shaft carries at its end outside cranks, having balance weights formed on them, these cranks being opposed to the adjacent inside cranks, and being connected by vertical coupling rods to the cranks at the end of the hind axle directly below. One of the vertical coupling rods just mentioned is shown in detail by figs. 26 and 27, from which it will be seen that the rod is near each end widened out and reduced to ¼ in. in thickness so as to give some lateral elasticity. The brasses at each end are not adjustable, being simply fixed on the rod by a set pin as shown; they are, however, made in halves, so as to enable them to completely inclose the crank-pins and exclude dust.

Each of the vertical coupling rods has a horizontal arm formed on it at its lower end, as shown in fig. 26, and to the end of this arm the corresponding horizontal coupling rod, extending to the crank on the end of the leading axle is attached, as shown in fig. 30. The bearing at the front end of each horizontal coupling is, for convenience of oiling, fitted with a lubricator raised on a tube as shown in fig. 29. Figs. 31 and 32 show in detail the vertical links which we have already mentioned as connecting the upper axle-boxes or crank-shaft bearings with those of the hind axles.

We must now deal with the arrangement of the carrying wheel and axles, and their connection to the framing of the engine. Referring to the general views, figs. 1, 2 and 3, and the detail views of the hind axle boxes, figs. 33, 34 and 35, it will be seen that the carrying wheels are of the wrought-iron disc pattern, and are 22 in. in diameter over tread of tire, the latter being of steel, The axles have outside bearings, and are fitted with overhung cranks outside the bearings as already mentioned. The axle bearings are provided with packing pieces forming segments of a cylinder, as shown in fig. 33, so that the bearings are free to rock in their axle-boxes, and thus accommodate themselves to any lateral inclination of the axles caused by the play of the springs. Each axle is provided with a dust guard extending over the boss of the corresponding wheel, as shown in figs. 33 and 35.

The lower axle-boxes do not slide in guides as is usual, but are bolted to plates of spring steel each 4½ in. by ½ in., two of these plates extending above and two below the axle-boxes on each side of the engine. These spring plates are bolted to the axle-boxes as shown in figs. 33 and 34, while the ends of one of each pair of plates are provided with eyes, and are coupled by pins to vertical beams hinged to the main frame of the engine, as shown in figs. 1 and 2. These long spring plates keep the axles in place longitudinally while permitting a certain amount of vertical play, the weight of the engine, however, being chiefly taken by other springs of the ordinary pattern arranged above the axle-boxes, as shown in figs. 1 and 3.

Figs. 36 to 40 show the details of the steam brake, this consisting of a cylinder fitted with two pistons between which the steam is admitted. The pistons when forced outwards thrust against cross beams which extend right across the engine, as shown in the general plan, fig. 2, each cross-beam carrying at each end a cast-iron brake block, which it can thus force directly against the corresponding wheel. Each cross-beam also is coupled by a pair of links to a cross-bar, which likewise carries brake blocks at its extremities. Thus the front cross-beam when forced forwards by the pressure of the corresponding piston, forces the two blocks at its extremities against the front pair of wheels, and draws another pair of brake blocks (by means of the links and cross-bar just mentioned) against the hind pair of wheels. The hind cross-bar in the same way applies brake blocks direct to the hind pair of wheels, and draws blocks into contact with the front pair of wheels. Strong springs tend to force the two cross-beams together, and thus force the pistons back to their central position when the pressure in the brake cylinder is relieved.

Figs. 41 to 44 show the details of the connections to the main frames of the long spring plates which are secured to the top and bottom of the axle-boxes, as described by us in our former notice. The arrangement will be readily understood on comparing figs. 41 to 44 with the general views.

The details of the fire-grate, hollow bridge and furnace front are shown by figs. 45, 46 and 47. A reference to the longitudinal section of the engine will show that the boiler is of the Cornish multitubular type, it being cylindrical with a cylindrical furnace, from which 64 tubes, 1⅝ in. in diameter outside, and 2 ft. 10¾ in. long between tube-plates extend to the smoke-box. The boiler is 2 ft. 5½ in. in diameter inside the smallest plate, and 6 ft. 4⅜ in. long between end plates, while the furnace is 1 ft. 7¾ in. in diameter inside, and 3 ft. 7⅝ in. long from the tube-plate to the inside of the furnace front. Referring to figs. 45 and 46 it will be seen that the fire-grate is composed of six wrought-iron tubes 2¼ in. in diameter outside, and 1⅝ in. inside, these tubes being notched at their outer ends to enable them to be turned round, while at their inner ends they communicate with the interior of the hollow cast-iron bridge. The hollow fire-bars thus form channels through which air is conducted to the bridge, whence it escapes through the perforated plate shown in fig. 45, this plate, which comes next the fire, being made so as to be readily renewable.

The last details we illustrate are those shown by figs. 48 to 52, these views representing the boiler-mounting carrying the safety-valves, whistle, quadrant for regulator handle, attachments for injector steam cocks, pressure gauge, etc. As will be seen from the engravings, this mounting or standard is made to serve a variety of purposes, thus saving other attachments to the boiler, and it constitutes a very neat arrangement. Altogether the little locomotive we have been describing is marked by much originality of design, and possesses many features of special interest.

We append a summary of the chief dimensions, while we may add that the engine is capable of drawing a load of 25 empty wagons, each weighing 15 cwt., or in all about 18 tons, up a spiral incline of about 280 yards in length, the rise being 1 in 39, and the radius of the curve 60 ft. only. The chief dimensions, etc., of the engine are as follows:

Cylinders and wheels:	Ft.	In.
Diameter of cylinders	0	7
Stroke of piston	0	8½
Diameter of wheels	1	10
Wheel base	3	0
Boiler:		
Diameter of barrel (inside)	2	5
Number of tubes	64	
Diameter of tubes (outside)	0	1⅝
Length of tubes between tube plates	2	10⅜
Heating surface:		
Fire-box	13.75 square ft.	
Tubes	72.61 " "	
Total heating surface	86.36 " "	
Pressure of steam	180 lbs.	
Weight on leading axle	3 tons 12 cwts.	
" " trailing "	3 " 16 "	
Total weight	7 " 8 "	
Contents of water tanks	80 gallons.	
" " coal bunkers	3½ cwts.	

The coal bunkers are small, as 4 cwt. is sufficient for a full day's work of 24 hours, and the coal stations are always close at hand for fresh supplies.

The Cost of Stopping Trains at Crossings.

The following is a report of the discussion of Mr. Shinn's paper (which we published last week) at the meeting of the American Society of Civil Engineers, Jan. 3, 1883:

MR. CHANUTE—I had hoped that the author would have presented to us something that we could take hold of and critise—that he would at least have given us a careful estimate of the cost of making a stop, which is a matter of great importance and which has occasioned the expenditure of many thousand of dollars in litigation. It is clear that it

costs something to stop a train, and it is clear also that corporations, which are supposed to be insensible to the danger arising to life and property from grade crossings, may be moved to expend the sums of money necessary to avoid them by being shown that it promotes true economy. I regret very much, therefore, that the author has only shown us the absurdities of the calculations heretofore made, and has not attempted to substitute some truer data of his own. There would then be something to take hold of and criticise, and we might be able to show up some of his mistakes, if he had made any.

The cost of railroad stops I have heard discussed and sworn to extensively. I remember a crossing case in which it was proved in evidence that the cost was $2 per train. That was proved by the concurrent testimony of four or five different witnesses. Upon cross-examination, however, it became evident how they had got their data. They had consulted together over night, and had reached the conclusion that the cost of stopping a train was equivalent to running about two miles on the main track; and inasmuch as they knew that the cost of running a train a mile was, in general terms, a dollar, they had inferred that the cost of making a stop must be two dollars.

The minimum cost I heard proved in a court in the West. A sharp attorney in the case had caused a brake-shoe to be taken off and had had it brought into court. Placing a witness on the stand he made him explain to the jury in what way it was fastened to the brake-head, in what way it was brought into contact with the wheel, and how it wore away gradually on the application of the brake; and the witness was then asked how much was worn off from that shoe at each stop. He said he could not tell exactly. He knew in a general way that a brake-shoe would run about 15,000 miles. "Well," the attorney said to him, "we want you to be liberal in your estimate. Assume a good long stop, and tell me how much you think is worn off upon making each stop." The witness answered that he thought about an ounce was worn off. "How much do you pay for your cast iron?" he was asked. He said they were then paying 3 cents; the year before it had been 2½ cents, and they had paid as much as 3¼ cents. The attorney wanted him to be liberal again. "Assume," he said, "the cost of cast iron at four cents a pound, and with that assumption the jury can calculate the cost of the stop." The cost per stop was accordingly calculated to be just a quarter of a cent. That, I believe, is the minimum estimate. Between those I have heard a great many, varying from seven cents up to a dollar or more.

It is evident, however, that there are certain elements of cost in stopping a train, and some, I think I may say, have been accurately ascertained. There is, first, the cost of the fuel which is washed by the destruction of the momentum of the train; the fuel which is burned in the fire-box while the train is standing still, and that again which is necessary to generate the steam to put the train in motion and regain the lost speed. The Pennsylvania Railroad has, I think, in the past few years made a series of accurate experiments in that direction, and they have found that the cost of fuel, at the low price which they pay for it, for stopping a train, averages from 12 to 15 cents per train. In addition to that the increased wear of rails in the vicinity of crossings, which are found to last but about one-third as long as rails laid upon the main line where trains run at full speed, is such as to add about ten cents more to the cost of stopping a train. Those rails wear out very much faster than the same rails would if laid on the main track. They require renewing in a period of time varying from one year up to three years, in accordance with the frequency with which a crossing is used. Crossings cost about $450 apiece. There is also the wear and tear of the wheels and running gear of the trains. I do not believe it is possible to ascertain exactly what that is—to separate it from the ordinary wear and the ordinary breakages which occur in trains. The Pennsylvania Railroad people know, however, that between 80 and 90 per cent. of the breakages of the working parts of their engines occur immediately upon starting from a stop, and they assume that much of it must be due to the shocks and jars which trains receive either upon frogs or crossings. They have, I think, never been able as yet to put a money value upon it. They also know that many wheels break either immediately at crossings or immediately after leaving them. But I do not believe that it is practicable to separate the exact cost due to a crossing or to a stop from the other expenses with which it is merged. Then the wages of the train-men constitute an item to be taken into account. They are paid a certain sum per diem, and if they lose five minutes at a crossing it is evident that that is part of the working day for which they are paid. I believe it is generally accepted, as a rough estimate, that the cost of stopping a train under ordinary circumstances, with ordinary weight of train, lies between 30 and 60 cents per stop. I think the Pennsylvania people assume it to be 60 cents, although they say that it is as difficult to estimate the cost to a railroad of a stop as the value of a shower to a farmer.

It is very evident that the cost of stopping them depends upon surrounding circumstances; first, upon the speed of the train; secondly, upon its weight; thirdly, upon the condition of the weather at the time; fourthly, upon the other surrounding circumstances which pertain to the stock—the location, gradients and other local circumstances. I remember that several attempts have been made by engineers to eliminate these various circumstances, and that a number of interesting papers have been written on the subject, one of which I think was published some years ago in the *Railroad Gazette*, written by Mr. Appleton. He had made some experiments on a New England road to ascertain the amount of fuel burned. In addition to that, there has been a great deal of testimony in various crossing cases, in which engineers have given more or less complete data upon which to make these calculations.

It is, in my mind, a very interesting subject, and I would suggest that the author of this paper, having proved the absurdity of the calculation heretofore made, owes it to himself and to the society to continue his labors and to give us an accurate estimate of the actual cost of stopping trains, based upon reliable data.

MR. COOPER.—Most of this author's papers are of the same character as the one which has just been read. He has recently published a paper which has been copied very extensively in all the scientific papers to prove that the deflection of a bridge caused by a locomotive crossing it is three times the deflection that would be caused by the same locomotive standing on the bridge. If he will bring any facts to prove that, it will be very interesting.

MR. CHANUTE.—Such erroneous calculations are easily disproved. In one of the cases that I mentioned, it was proved that the cost of stopping trains was two dollars per train. The whole testimony was set aside, upon the production of the time-table of the road showing the number of stops which each train had to make at the regular stations and the number of trains run daily; a simple arithmetical calculation proving that at $2, or even at a dollar, the cost of making the stops was from one and a half to three times the whole cost of operating the road.

In another case in which a crossing was in controversy and in which the wildest estimates were produced on both sides, the last witness upon the stand was asked as to the circumstances under which the crossing was operated. In that case the crossing had been put down and the proceedings were to compel the crossing company to take it up again. The road crossed naturally proved the largest possible amount of cost per train, and the road crossing found the minimum. That was the very case in which it was shown that it cost only a quarter of a cent to stop a train; and after all that evidence was in, a witness was put upon the stand who was the flagman at the crossing, and he was asked in what way the crossing was operated and how long the trains had to stop, and his evidence was that they did not stop at all. So I would ask Mr. Shinn whether the trains of the Pittsburgh & Fort Wayne road stop at those 29 crossings. I think they do not stop at some of them.

MR. FORNEY.—With reference to Mr. Cooper's remarks, I will say that the calculations which have been criticised have been published in the Ohio State Railroad Report. The probabilities are they will influence the average Ohio legislators in making laws for the railroads of the state, and I think, therefore, it is a very proper thing for a society like this to set the matter right and to prevent misapprehension which would otherwise exist.

MR. CHANUTE.—I think if the Ohio legislators put their foot down on grade crossings they will do a very good thing to the people of Ohio and to the people of the country at large. For it is very evident that such crossings are a source of great danger, and the universal tendency, I think, among railroad men is to discountenance them more and more, chiefly on account of their danger to life and limb; and I should be very sorry if anything going out of this Society should encourage people in putting down any more grade crossings.

MR. FISHER.—I am very glad to hear the remarks of my friend Mr. Chanute; but at other times, in the course of his life, I have heard him express somewhat different opinions.

MR. CHANUTE.—Wishing to give credit to whom it is due, I will say that although I may have been of different mind many years ago, I was converted to my present way of thinking by Mr. Fisher.

MR. FISHER.—If I accomplished that, I shall be disposed to look upon it as the best piece of engineering work I ever performed.

The subject of grade crossings is of very great importance to such roads as have a heavy traffic. Such companies feel their disadvantage more than new single-track roads with small traffic, which it is desirable to get into operation at a minimum cost, regardless of the delay and danger they may produce upon the traffic of other roads.

MR. SHINN.—The criticisms of my paper are two, in the main. There is first, that of Mr. Cooper. As I pointed out, the author of these statements which I have criticised, is a professor of engineering in a university. It is evident, however, from the fact that the Commissioner of Railroads and Telegraphs of the state of Ohio called upon him to make a tour over the Ohio railroads and report the facts that he gathered during that tour, and that the Commissioner thought those facts of sufficient importance to publish them at length in his report, that the gentleman must have some standing in that community. Whether that standing is professional, or what it is, I do not undertake to say; but it certainly is of such a character as to give his statements weight. If there is any more important occupation that a man can be engaged in than instructing the young men who are coming forward to take our places, I confess I do not know what it is. And if a man who is engaged in that has, in some way or other, made a mistake about it, I do not think it lies without the scope of this Society to point that fact out.

In the next place, as was observed by Mr. Forney, the publication of the report by the Commissioner of Ohio Railways is intended for the enlightenment of legislators in regard to their official duties. Now, however desirable it may be that the legislators of Ohio should forbid the use of grade crossings, I do not think that their action on the subject should be founded upon a false basis. Therefore, I think the author's statements are worthy of criticism by this society.

These figures, as I stated in the paper, were brought to my attention by a man engaged in business connected with railways, and he thought he could turn to account the computations of this Professor in regard to the cost of grade stops. He expressed the opinion that $1.28 was a large figure. He could not, he said, discover the fallacy in the reasoning, and he was inclined to suppose therefore that it was true.

Now the truth in regard to all such matters should be given, if it is possible to get at it; and any action which is based upon false statements of facts, or upon false reasoning from facts, will sooner or later do injury. On the question of the desirability of doing away with grade crossings, I do not stand second to any gentleman in this room. While on the last railroad that I had occasion to be connected with the building of, I succeeded at a very considerable sacrifice of money and some of grade in avoiding two grade crossings. But these calculations do not refer, as a rule, to the subject of doing away with grade crossings; they refer only to the subject of doing away with the stops at grade crossings, which is wholly a different matter. The author after getting through with his calculations as far as I followed him, proceeds to refer to the fact that a law was enacted by the Legislature of Ohio recently, providing that whenever the railroad companies at any grade crossings made arrangements to use such a system of interlocking signals as was satisfactory to the Commissioner of Railways, the Commissioner should be authorized to give that company a document absolving them from the necessity of making stops at those crossings; and it is the sole aim of these calculations to show how much money they could afford to spend to avoid the stops.

In regard to Mr. Chanute's criticism, I acknowledge that it would be very desirable for the society and for me if I could have presented here, to-night, my calculation of the cost of stopping at grade crossings. But I am not willing as the author of these calculations was, to make assumptions in regard to the greater part of the facts, and, then make other assumptions in regard to the theory, and then put those two sets of assumptions together in the form of an equation, and work out the result. I have not been actively engaged in the railroading for about ten years, and it is not in my way at this time to collect the data necessary to a proper treatment of the subject. But because I could not give you a whole loaf, I did not think that I should refuse to give you any bread. I think I have shown that the real cost lies considerably within the sum stated by this calculator. Mr. Chanute has stated it with a good deal more accuracy than that. I would be willing that Mr. Chanute should wind up this discussion by giving us the actual cost.

MR. CHANUTE.—I think there is nothing more to be said after the author has reviewed the criticisms of his paper.

In the paper as published by us there was the following error in the figures in the statement of cost of stopping trains in the Pittsburgh, Fort Wayne & Chicago Railway—

It should read:

"* * * The cost at $100 per day each for 330 days would be

$$330 \times \$100 \times 29 = \$957{,}000.$$

per annum for *stopping trains at crossings*.

The whole operating expenses (exclusive of general expenses) of this railway of 468 miles in length were for 1881, $5,449,136.14, of which sum $957,000 is 17.56 per cent."

Standard Time for Southern Roads.

Mr. H. S. Haines, General Manager of the Savannah, Florida & Western road, has issued a circular proposing the following system of standard time for the railroads in that part of the United States lying south of the Potomac and Ohio and east of the Mississippi River:

Washington time to be the standard time in West Virginia, Virginia, North Carolina, and South Carolina, except the Atlanta & Charlotte Air-Line Railroad and branches.

Thirty minutes slower than Washington time to be the standard in Georgia, Florida, Alabama, Tennessee and Kentucky, excepting the Chicago, St. Louis & New Orleans Railroad and branches, and including the Mobile & New Orleans Line of the Louisville & Nashville Railroad and the Mobile & Ohio Railroad and branches.

Forty-five minutes slower than Washington time to be the standard in Mississippi, excepting the Mobile & Ohio Railroad and branches, and the Mobile & New Orleans Railroad, and including the Chicago, St. Louis & New Orleans Railroad and branches.

The standard time to change as follows:

From Washington time to 30 minutes slower at Parkersburg, W. Va.; Huntington, W. Va.; Bristol, Tenn.; Charlotte, N. C.; Spartanburg, S. C., and Greenville, S. C. (For Atlanta & Charlotte Air-Line); Augusta, Ga., Savannah, Ga.

From 30 minutes slower than Washington time to 45 minutes slower:

At all crossings of Chicago, St. Louis & New Orlean Railroad and branches in Kentucky and Tennessee; all crossings of Mobile & Ohio Railroad and branches in Mississippi; New Orleans via Mobile & New Orleans Railroad.

The difference between standard railroad time and local time would be as follows:

STANDARD RAILROAD TIME.

Atlanta, Ga., same as local.

Augusta, Ga., standard for South Carolina is 20 minutes faster than local. Standard for Georgia 10 minutes slower.

Charleston, S. C., standard 12 minutes faster than local.

Columbia, S. C., standard 16 minutes faster than local.

Danville, Va., standard 10 minutes faster than local.

Knoxville, Tenn., standard 2 minutes slower than local.

Louisville, Ky., standard 4 minutes faster than local.

Macon, Ga., 3 minutes slower than local.

Memphis, Tenn., standard 22 minutes faster than local, except for Mississippi & Tennessee Railroad, which is 7 minutes faster.

New Orleans, La., same as local, except for Mobile & New Orleans Railroad, which is 22 minutes faster.

Paducah, Ky., 16 minutes faster than local.

Pensacola, Fla., 11 minutes faster than local.

Portsmouth, Va., 3 minutes slower than local.

Richmond, Va., 2 minutes faster than local.

Rome, Ga., 2 minutes faster than local.

Savannah, Ga., 16 minutes faster than local for South Carolina. 14 minutes slower than local for Georgia.

Selma, Ala., 10 minutes faster than local.

Vicksburg, Miss., 10 minutes faster than local.

Wilmington, N. C., 4 minutes faster than local.

Mr. Haines requests railroad managers to send him their opinions on the standard time system as proposed by him.

The Joy Valve Gear.

Mr. J. W. Stokes, division master machanic on the Ohio & Mississippi Railway, has sent the following report of the working of this year on one of the engines on that road to Mr. Turner the agent of Mr. Joy.

"Engine No. 18 with 17½ x 22in. cylinders, employed in freight service on the Springfield Division of the Ohio & Mississippi Railway, is equipped with Joy's valve gear, and has been in continuous service since it was put on—Oct. 9, 1882, giving very satisfactory results. I am arranging to test the engine for coal and water as soon as I can assign it to a particular part of the road where our facilities for weighing can be made use of. Thus far the showing for coal consumed as compared with other engines is very favorable, and the engine has already made a good reputation amongst the men for steady pulling and hanging on to its work on grades. The new gear has elicited a great deal of comment from railroad men, especially in Springfield, where it is part of the time. I consider the gear a decided success and in my opinion it will supersede the link motion in spite of all prejudice."

ANNUAL REPORTS.

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the current volume of the *Railroad Gazette*.

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Maine Central.

This company owns or leases and works the following lines, covering all the central and more populous part of the state of Maine:

	Miles.
Portland to Bangor	136.6
Loop from Cumberland to Waterville	72.9
Lewiston, by Brunswick, to Bath	31.0
Crowley Junction, by Leeds Junction, to Farmington	47.8
Waterville to Skowhegan	19.2
Total owned	307.5
Newport & Dexter, leased, Dexter to Newport	14.0
Belfast & Moosehead Lake, leased, Belfast to Burnham	33.5
	47.5
Total worked	355.0

The report is for the year ending Sept. 30, 1882.

The equipment consists of 59 locomotives; 66 passenger, 23 baggage and 5 postal cars; 651 box, hay and stock cars, 489 platform and 36 saloon cars; 17 snow plows and 10 flange scrapers. This is an increase during the year of 1 locomotive, 5 flat dump, 6 passenger and 1 saloon car.

The general account is as follows:

Stock		$3,603,300.00
Stock bonds		16,800.00
Bonds		8,702,591.26
Old Portland & Kennebec stock not converted		800.00
Interest scrip ($9,892) and notes payable ($13,000)		22,892.60
Coupons, dividends, rents, etc		269,188.11
Bills and accounts		50,933.85
Profit and loss		142,965.31
Total		$12,827,808.57
Road and equipment	$11,696,868.26	
Androscoggin lease	768,333.33	
Stocks and certificates	24,700.00	
Materials	262,219.21	
Dues and accounts	65,617.62	
Cash	10,070.15	
		12,827,808.57

There was no material change in this account during the year. The bonded debt consists of $1,100,000 old loan

(Androscoggin & Kennebec) 6 per cent. bonds; $496,500 extension 6 per cents, and $756,800 7 per cents; $217,300 Portland & Kennebec first-mortgage 6 per cents; $1,791.26 funded interest and $1,166,710 (Portland & Kennebec) consolidated 6 per cents; $425,000 Androscoggin Railroad 6 per cents; $623,000 Leeds & Farmington 6 per cents; and $3,905,500 of consolidated 7 per cents in four classes. The yearly interest charge is $568,761.25.

The earnings have been as follows:

	1881-82.	1880-81.	Inc. or Dec.	P. c.
Passengers	$895,989	$772,833	I. $123,156	15.9
Freight	1,067,715	1,003,854	I. 63,861	6.3
Mails, express, etc.	113,390	100,392	I. 12,998	11.5
Total	$2,077,094	$1,877,079	I. $200,015	10.6
Expenses	1,359,373	1,229,351	I. 130,016	10.6
Net earnings	$717,721	$647,722	I. $69,999	10.8
Gross earnings per mile	5,934	5,362	I. 571	10.6
Net earnings per mile	2,051	5,363	200	10.8
Per cent of expenses	65.45	65.43	0.02	....

The earnings from each source show a gratifying increase. The larger proportional increase in passenger earnings is attributed to the increased travel by tourists.

The following is the income account for the year:

Net earnings as above		$717,720.73
Rents and wharfage		5,068.40
Dividends Dexter & Newport stock		300.00
		$723,089.13
Interest	$569,542.21	
Rent leased lines	54,000.00	
Dividend	71,822.00	
		695,364.21
Surplus for the year		$27,724.92
Balance of profit and loss account, Sept. 30, 1881		374,792.84
Discount		60.00
Total		$402,577.76
Interest and rents accrued	$258,724.29	
Old expenses and accounts charged off	888.16	
		259,612.45
Balance of profit and loss, Sept. 30, 1882		$142,965.31

The traffic shows a very considerable increase; it was as follows:

Train-miles.	1881-82.	1880-81.	Inc. or Dec.	P. c.
Passenger	631,471	610,217	I. 21,254	3.5
Freight	465,496	454,875	I. 10,621	2.3
Service and switching.	349,271	327,808	I. 21,463	6.5
Total	1,446,238	1,392,900	I. 53,338	3.8
Passengers carried	934,738	760,744	I. 173,994	22.8
Passenger-miles	34,947,396	28,544,293	I. 6,403,103	22.4
Tons freight carried	556,166	515,946	I. 40,220	7.8
Ton-miles	38,900,118	36,695,243	I. 2,204,875	6.0
Av. train-load.				
Passengers, No.	55.34	46.78	I. 8.56	18.3
Freight, tons	83.57	80.67	I. 2.90	3.6
Average receipts.				
Per pass.-mile	2.56 cts.	2.70 cts.	D. 0.14 cts.	5.2
Per ton-mile	2.75 "	2.74 "	I. 0.01 "	...

During the year the company has laid 4.505 tons of steel rails, and, since the close of the fiscal year, has received sufficient steel rails to complete the track from Portland to Bangor *via* Augusta. This leaves but 40 miles of the main line (from a point near Green to Waterville) laid with iron which it is expected will be renewed by June 1, 1883. In addition, iron rails were repaired and relaid on 43 miles to track; 125,500 new ties laid; 18,000 cubic yards of ballast were placed on 12.5 miles of track, and 2.57 miles of new sidings were built. There were 22.4 miles of new fence built, and 6.2 miles repaired. Six new bridges, aggregating 422 feet in length, 1,261 cubic yards of stone masonry, and 10 new buildings, sheds, etc., at various points were also built during the year.

On a proposition made to the company during the year by parties representing cities and towns interested in the Knox & Lincoln road for a lease of that road to this company. The directors agreed to take a perpetual lease on terms satisfactory to such representatives. This was subsequently defeated by popular vote of the several municipalities interested.

The European & North American Railway, from Bangor to Vanceboro, 114 miles, has been leased perpetually at an annual rental of $125,000 from April 1, 1882, but the company did not assume possession until Oct. 1, 1882. By the terms of the lease this company assumed the outstanding indebtedness of that road, including $1,000,000 city of Bangor 6 per cent. bonds, and $19,000 old first-mortgage 6 per cent. It also became entitled to the cash and other assets, which will be shown in next report.

EUROPEAN & NORTH AMERICAN.

The following statements of the European & North American Railway are given in the Maine Central report:

Stock		$2,386,300.00
Land grant bonds and coupons ($28,050)		113,050.00
Bonded debt		1,019,000.00
Due on Stetson purchase		15,000.00
Accounts, interest and coupons		19,086.93
Profit and loss		236,388.58
Total		$3,788,825.51
Road and equipment	$3,586,249.00	
Materials, etc	93,851.12	
Accounts and notes	100,054.95	
Cash	8,670.44	
		$3,788,825.51

The earnings and expenses of this road for the full year ending Sept. 30, were as follows:

	1881-82.	1880-81.	Inc. or Dec.	P. c.
Passengers	$189,390	$151,958	I. $37,432	24.6
Freight	316,415	285,147	I. 31,268	10.9
Mail, etc.	40,218	40,832	D. 614	1.5
Total	$546,053	$477,937	I. $68,086	14.2
Expenses	324,328	398,168	D. 73,840	18.5
Net earnings	$221,695	$79,769	I. $141,926	177.9
Gross earn. per mile	4,790	4,192	I. 598	14.2
Net " "	1,945	700	I. 1,245	177.9
Per cent. of exps.	59.40	83.31	D. 23.91	...

The increase in earnings was notable, and was due largely to the same causes as that on the Maine Central. The decrease in expenses was chiefly due to the improvements made in the condition of the road and equipment during the previous year.

The income account was as follows:

Net earnings of the road	$221,694.56
Rents, etc., received	6,439.95
Sales of land	76,641.48
Total	$304,775.99
Interest paid	76,930.00
Balance	$227,845.99

During the year there were carried 220,948 passengers, an increase of 47,073, and 242,743 tons of freight, an increase of 20,682 tons.

Of the 114 miles of road 84 are laid with steel rails and the track and equipment are generally in good condition. It is believed that the lease will prove advantageous to the Maine Central Company. The road is a natural extension of the Central, and can best be worked by that company.

New York, New Haven & Hartford.

This company owns a line from Williamsbridge, N. Y., to Springfield, Mass., 123.2 miles, with branches from Berlin, Conn., to New Britain, 3 milee; from Berlin to Middletown, 10 miles; in Hartford, 1 mile; from Windsor Locks, Conn., to Suffield, 4.5 miles. It leases the Harlem River & Portchester road, from New Rochelle, N. Y., to Harlem River 11.8 miles, and the Shore Line road, from New Haven, Conn., to New London, 50 miles, making 141.7 miles owned and 203.5 miles worked. The trains run over the New York & Harlem road from Williamsbridge to the Grand Central Depot in New York, 11 miles. The report is for the year ending Sept. 30.

Since the close of the year the company has leased the Boston & New York Air Line, from New Haven to Willimantic, 50 miles.

The equipment consists of 105 engines; 228 passenger and 82 baggage and mail cars; 2,153 freight cars. This is an increase during the year of 5 engines, 27 passenger and 14 baggage cars, and 6 freight cars.

The general balance sheet is as follows:

Stock		$15,500,000.00
Interest unpaid		13,333.33
Bills payable		514,762.40
Accounts payable		579,584.45
Contingent account		189,018.09
Profit and loss		2,179,958.02
Total		$18,976,656.29
Road and property	$15,733,002.09	
Sinking fund	1,136,286.46	
Materials on hand	347,802.41	
Accounts receivable	352,188.27	
Advance to H. R. & P. C. R. R.	15,800.84	
Loans, stocks and bills receivable	1,170,570.00	
Cash	220,997.22	
		18,976,656.29

The company has no bonded debt, but is liable as indorser on $3,000,000 Harlem River & Portchester bonds, the annual interest charge on which is $170,000. The sinking fund and the loans, stocks and bills receivable chiefly represent securities of the New Haven & Northampton and the Hartford & Connecticut Valley roads.

The traffic for the year was as follows:

Train miles:	1881-82.	1880-81.	Inc. or Dec.	P. c.
Passengers	2,017,635	1,556,651	I. 460,984	29.6
Freight	1,559,368	1,255,846	I. 304,522	24.2
Other	120,208	71,129	I. 49,079	69.1
Total	3,697,211	2,883,626	I. 813,585	28.3
Passengers car'd	6,997,385	5,275,795	I. 1,101,592	20.8
Passenger miles	185,261,407	152,630,696	I. 32,530,711	21.3
Tons freight car'd.	1,908,342	1,665,573	I. 242,809	14.6
Ton-miles	117,459,231	116,611,607	I. 847,624	0.7
Av. train load:				
Passengers, No.	92	98	D. 6	6.1
Freight, tons	75	93	D. 18	19.4

The traffic of the Shore Line is included in 1881-82, but not in 1880-81. The increase in train mileage is not due to this alone, however; there was a considerable increase in the number of trains run on the main line. To this increase and to the addition of the Shore Line was due the reduction in train loads. To the greater mileage is due also part of the increase in expenses shown below.

The earnings for the year were as follows, the Shore Line earnings and expenses for 1880-81 (given separately in the report for that year) being added for purposes of comparison:

	1881-82.	1880-81.	Inc. or Dec	P.c
Passengers	$3,393,514	$3,064,265	I. $329,249	10.7
Freight	2,065,856	1,980,721	I. 85,135	4.3
Mail, etc.	397,260	317,781	I. 79,479	25.0
Rents and interest	81,178	81,171	I. 7	....
Total	$5,937,808	$5,443,938	I. $493,870	9.1
Expenses	3,968,120	3,169,742	I. 771,379	24.1
Net earnings	$1,969,689	$2,247,196	D. $277,508	12.3
Gross earn. per mile	29,178	26,752	I. 2,426	9.1
Net " " "	9,679	21,043	D. 1,364	12.3
Per cent. of exps.	66.83	58.72	I. 8.11	...

Taxes, included above in expenses, were $264,440.54 last year, and $238,642.12 in 1880-81. The earnings over the Harlem road are paid as rental for the use of that road, and are not included either in earnings or expenses above; they were $291,503.67 last year, and $295,307.83 the previous year.

The net results of the year were as follows:

Net earnings, as above		$1,969,688.13
Rental of Shore Line	$100,000	
Interest on Harlem River & Portchester bonds	170,000	
Dividends, 10 per cent.	1,550,000	
		1,820,000.00
Surplus for the year		$149,688.13

The various transactions of the year are more fully expressed in the income account below, which includes all the amounts stated above. The surplus was equivalent to about 1 per cent. additional on the stock.

The income account for the year was as follows:

Balance, cash assets, Oct. 1, 1881		$2,290,753.28
Materials on hand Oct. 1, 1881		373,530.92
Increase in accounts payable		420,681.87
Income for the year		5,937,807.64
Total		$9,031,773.71
Expenses, taxes and interest	$4,238,119.51	
Dividends, 10 per cent	1,550,000.00	
Sinking fund	1,136,286.46	
Advances to Harlem River & Port. R.R.	15,808.84	
Stock Harlem River & Port. R. R.	42,100.00	
Stock New York Transfer Co.	1,000.00	
Stock and bonds, Hartford & Connec-Valley	1,076,810.09	
		8,060,785.81
Balance, Oct. 1, 1882		$970,987.90
Expressed in the following accounts:		
Materials on hand	$347,802.41	
Due from agents	187,518.29	
Due from connecting roads	164,670.07	
Bills receivable	50,000.00	
Cash	220,997.22	
		$970,987.90

The charge to sinking fund is fully explained below; it is chiefly a change in the form of accounts.

The usual improvements and additions to property were made during the year. The sum of $300,000, set aside from the earnings of 1881, for improvements, has been expended, about $140,000 in the purchase of lands at Harlem River station and elsewhere, and the balance for a stone arch bridge at Westbrook, guard-piers at the Connecticut River bridge and for new equipment.

In September, a lease of the Boston & New York Air Line for 99 years, was substantially concluded, although this lease was not formally ratified until Nov. 25. The report says: "Your board is of the opinion that this lease will prove more satisfactory and less burdensome to this company than the old pooling contract, with its provisions for periodical readjustment was likely to be, and the public, as your board believes, will be better served by having that road operated by this company than they were under the former arrangement.

"The various cash assets held by this company and heretofore reported under that head are in the report of this year, as will be observed, treated as a sinking fund. Some of these assets have been held by the company for several years, though the principal item is the investment in the New Haven & Northampton Co., made last year and mentioned in our last annual report.

"The matter of improving the curvature and grades of our New York Division has been under consideration for the last year or more, and, in our opinion, the time has come when it is safe to assume that the increasing business of the road will justify a substantial expenditure in this direction. The board has already taken steps, by way of surveys, etc., towards these improvements.

"It is not expected that our road, with its double track, will, for some time to come, be worked up to the limit of its capacity. At the same time your board are of the opinion that, along with this change of curves and grades, there ought to go the putting down of two more tracks. Whether these improvements can, any of them, be said to be necessary is not so important as whether they can be clearly vindicated on sound business principles, and are dictated by a conservative and judicious forecast of the future. Your present board are of the opinion, all things considered, that they will be seen to be fully justified by the time they are completed.

"These alterations will necessitate the expenditure of more money for the next year or two than will be available from the earnings of the road. It is expected, therefore, that they will be carried on with money raised upon the credit of the company. If these views shall be adopted by the incoming board, it is believed that, before the next annual meeting, very substantial progress will have been made towards effecting these various improvements."

Philadelphia & Reading.

The full report of this company has not been issued as usual, the full statements, including the general balance sheet, being reserved for presentation at an adjourned meeting when the readjustment now in progress shall have been completed. The following statements are from the reports presented by the receivers and by the board of managers at the annual meeting this week.

The property remains substantially unchanged—846 miles of railroad owned, leased and controlled, and 153 miles of canal. Some additions to the property are in progress, but are as yet incomplete.

The statement of the Receivers shows the earnings and expenses for the year ending Nov. 30, 1882, as follows:

	Railroad Co.	Coal & Iron Co.	Both companies.
Gross earnings	$21,890,117	$15,010,044	$37,300,161
Working expenses	12,031,052	14,209,870	26,240,922
Net earnings	$9,859,065	$1,200,174	$12,759,239
Net earnings, 1881	9,141,946	1,199,445	717,848
Increase	$717,119	$729	$717,848
P c. of increase	7.8	0.1	6.9

The expenses, as thus reported, include certain expenditures for improvements of road, which, the managers claim, should properly be charged to construction or equipment account. No interest payments are included, the net earnings being the amounts from which all such charges are to paid.

The income statement is as follows:

	Railroad Co.	Coal & Iron Co.	Both companies.
Net earnings, as above.	$9,859,065	$1,200,174	$11,059,239
Debit balance renewal fund	348,455	.....	348,455
State tax on capital stock	63,014	.....	63,014
Full interest and rentals, including all accounts, whether paid by the Receivers or not	8,611,815	1,153,014	9,764,829
Total charges	$9,023,284	$1,153,014	$10,176,298
Surplus profit for year	$835,781	$47,160	$882,941
Surplus profit in 1881	142,589	40,667	183,256
Increase	$693,192	$6,493	$699,685

This statement represents the net result of an exceptionally prosperous year, when the coal traffic was the largest on record, and when prices of coal were generally well maintained throughout the year. The price of coal, it must be remembered, affects to a considerable extent the profits of the railroad company, as well as those of the coal and iron company, the rates recived for the transportation of coal depending upon the selling price.

A more detailed statement of the earnings of the companies, as given by the Receivers, is as follows:

R.R. Co.	Gross earnings.	Working expenses.	Per cent. of expenses.	Net earnings.
Railroad	$20,333,648.82	$11,472,510.00	56.4	$8,861,138.82
Canals	841,143.23	508,691.21	60.5	332,452.02
Steam-colliers	648,490.01	376,942.19	58.1	271,547.82
Richm'd coal-barges	66,834.55	84,377.24	126.2	*17,542.69
Total R.R. Co.	$21,890,116.61	$12,442,520.64	56.8	$9,447,595.97
Coal & Iron Co.				
Land Dep't	$443,369.12	$223,954.08	50.5	$219,415.04
Coal Dep't	13,018,780.72	12,267,042.10	94.2	751,738.62
Iron-ore Dep't.	32,972.85	42,909.44	130.1	*9,936.59
Rolling-Mill Dep't	1,749,139.51	1,675,965.69	95.8	73,173.82
Miscellaneous receipts	165,783.02	.....	.....	165,783.02
Total C. & I. Co.	$15,410,045.22	$14,209,871.31	92.2	$1,200,173.91
Total both Cos.	$37,300,161.83	$26,652,391.95	71.5	10,647,769.88

* Loss.

The Receivers' statement of traffic and of coal mined is as follows:

	1882.	1881.	Increase.	P. c.
Passengers carried	12,027,470	10,561,853	1,465,617	13.9
Tons merchandise	7,490,383	6,815,235	675,148	9.9
Tons coal	8,429,826	8,072,142	357,684	4.4
Tons coal carried by steam colliers	574,931	555,254	19,677	3.5
Tons coal mined:				
By Coal & Iron Co.	4,111,830	3,937,608	174,222	4.4
" tenants	1,512,959	1,484,992	27,967	1.9
Total from lands of C. & I. Co.	5,624,789	5,442,600	202,189	3.7

Coal is reported in tons of 2,240 lbs, as is the general custom of the anthracite coal trade; merchandise in tons of 2,000 lbs. This company does not usually report either passenger miles or ton-miles.

The Receivers' report says: "As there are no arrears of interest unprovided for upon either of the mortgages for the default of the payment of the interest upon which the receivers were appointed, and as the companies for the past two years have earned sufficient to pay all their fixed charges, there seems no longer any necessity for the continuance of the receivership, and as it will be necessary in order to provide for the increasing traffic of the company

likely to result from the new lines about being constructed in connection therewith that large expenditures should be made to provide new rolling stock and equipment, which the Receivers can only provide by using the income which otherwise should be appropriated to the payment of creditors, it is desirable, in the opinion of the Receivers, that the company should take possession of its property so as to be enabled to provide for this new capital without withholding from the bondholders the interest upon their obligations.

"During the period of the receivership, from May 24, 1880, until Nov. 30, 1882, $5,448,179,16 of income over and above all proper working expenses and renewals has been appropriated by the Receivers to the construction, purchase and liquidation, respectively, of various items of new equipment, new improvements and funded and floating debt As the property and equipment of the company during the receivership have been kept up to a full state of efficiency, and all the proper renewals and betterments made and charged to income, the above entire amount of $5,448,179.-16 but for the receivership could have been made a charge to capital account without requiring the various bondholders of the company to wait for the receipt of income. Although it is believed that the expenditure of income for the purposes above named was entirely wise and proper and has been fully justified by the increased earnings resulting from its expenditure, there seems to be no longer any reason to continue a system which perpetuates the necessity for a prolonged receivership, and as the company is now preparing to apply to the Court to take possession of its property, the Receivers are ready, upon the proper order of the Court being made, to turn the title, possession and management of the estate of the corporation over to the shareholders."

The report of President Gowen, of which a summary here is given us, says that the total payments on account of the issue of deferred income bonds were $7,605,491, of which $6,643,505 was paid in England and $961,986 in the United States. In August last the company executed a mortgage to the Pennsylvania Co. for Insurances on Lives and Granting Annuities as trustee to secure the issue of $80,-000,000 first series 5 per cent. consolidated mortgage bonds and $80,000,000 second series 5 per cent. consolidated mortgage bonds. Of the first series $72,942,700 is reserved to meet the entire mortgage debt of the Railroad Co. An issue of $10,000,000 of the second series has been authorized, the bonds to run for 50 years. Of the entire $80,000,000 of the second series, $69,903,910 is to be reserved to meet various obligations, such as mortgages and ground rents on the company's estate, convertible and debenture bonds of the Railroad and the Coal & Iron Co., and share capital and obligations of the leased lines of the Philadelphia & Reading Railroad Co.

The report continues: "Since their election at the last annual meeting of the stockholders the earnest attention of the managers has been directed to efforts to place the finances of the company on a sound basis and to terminate the receivership which has existed for nearly three years, during which the results of the business conducted by the receivers has been: For the first year a loss of $1,209,986.17; for the second year a profit of $183,256.14; for the third year a profit of $882,941.59.

"For the last year or eighteen months the only reason for the continuance of the receivership was the necessity of providing money for the large amount of new equipment and new work required by the rapidly-increasing traffic of the company. During the period when the money markets were in such condition as would have enabled the company to provide this new capital, the litigation instituted by Messrs. McCalmont Brothers & Co. prevented the accomplishment of the desired result; and when such litigation ceased the period of easy money markets had passed, and the managers were unable to supply the means without such a sacrifice in the price of securities as in their judgment would have been a greater evil than that resulting from the continuance of the receivership, which, by the use of the income resulting from the business, was enabled to supply the money required, although at the expense of forcing the junior security holders to wait somewhat longer for the payment of their interest."

The total amount of income used by the Receivers for capital accounts during the last three years has been as follows: For new engines and cars, $2,457,886.19; for new railroads, real estate, improvements, etc., $2,139,850.03; funded and floating debt paid, $850,452.94; total, $5,448,-179.16.

Regarding the attempt to sell $13,500,000 of 5 per cent. consols in Europe, the report says: "In order to take the property out of the hands of Receivers and supply out of new capital the amount of income diverted by the Receivers, an earnest effort was made by the managers during the last year to sell $13,500,000 of first series 5 per cent. consolidated mortgage bonds. At the price at which these bonds were offered to the public but $723,500 were sold, for all of which par in sterling, or 98 per cent., in dollars, less the discount for anticipated payments of instalments, was obtained. More could only have been sold by a sacrifice of price greater than that which the managers felt they would be justified in submitting to, and rather than make such a sacrifice it was considered wiser to pay 6 and 7 per cent. for money upon other securities for a year or two longer, within which time it is believed that the increased price obtainable for the 5 per cent. bonds would amount to far more than the increased interest to be paid in the meantime on the other securities. It is not believed that the entire $13,500,-000 of 5 per cent. bonds could have been sold at any time since the termination of the litigation with Messrs. McCalmont Brothers & Co. without involving such reduction of price as would be equal to a discount of $1,500,000. Such a loss the managers would have been justified in incurring only on the contingency of the sale of the 5 per cent. bonds being the only means of terminating the receivership and restoring the company to good credit, but as another plan presented itself by which in the judgment of the board at least $1,000,000 of such loss could be saved the managers preferred resorting to it, even at the expense of a few months' additional delay it bringing it to perfection.

"Such plan has now been perfected. To obtain the requisite amount of money a sale of the $5,000,000 of unissued general mortgage 7 per cent. bonds has been made at par, payable in cash on Jan. 15. Application will be made to the Court the present week to terminate the receivership accompanied by a petition praying that before such termination the cars and engines now held by the Receivers and paid for out of income may be transferred to the trustee of a car trust, upon which, at 6 per cent. interest, it is expected that $2,000,000 of cash will be obtained to pay the outstanding receivers' certificates. To adjust the claims of the various junior security holders upon fair and equitable terms the propositions have been made public, the managers having previously obtained the assurance of holders of large amounts of the securities named that the terms proposed would be accepted."

The report then proceeds to state the plan for the adjustment of the company's affairs by the issue of convertible script, which will be found in another column. President Gowen believes that a general acceptance of the propositions will effect such a reduction of the fixed charges of the company as will make the surplus earnings sufficient on a sound basis.

During the year the Managers have had to provide for the following:

On account of subscription of $1,000,000 of the stock of the Shamokin, Sunbury & Lewisburg Co	$617,79.21
On account of construction of extension of Catawissa Branch	103,270.63
For payment of January and July interest on general mortgage bonds	1,092,930.00
For payment of coupons from June, 1880, to June, 1882, inclusive, on income mortgage bonds	409,430.06
Total	$2,223,379.90

The present floating debt of both companies is $5,843,-645.47, but as the sale of the 7 per cent. general mortgage bonds will now supply the proper funds for the above expenditures, in addition to the amount received from the sale of $723,500 of first series 5 per cent. bonds, a very considerable amount of the floating debt will be paid at once out of the proceeds, so as to reduce the floating debt to less than the amount still due upon the deferred income bonds, which amount it is expected will be realized, so as to pay off the entire floating debt at an early date. In no event will the unissued deferred income bonds be sold at less than the original issueprice of 30 per cent., and as the receipt of money from this source is now not essential to the financial success of the company, it is probable that if the original subscribers do not pay for their allotments with interest, a higher rate than the issue price may be obtained for the unsold portion in the near future.

The report closes with a recommendation that when the meeting adjourned it should be to meet at the call of the President of the company, for the purpose of receiving and taking action upon an additional reports then to be made by the managers, showing the result of the application to the Court for the termination of the receivership, the result of the proposed funding and conversion scheme, the financial condition of the company, as affected by the reduction of fixed charges and floating debt, and embracing some suggestions for a revision of the ballance-sheets and accounts of the company and the future conduct of its business operations, so as to insure the distribution of future net earning to the shareholders.

Charlotte, Columbia & Augusta.

This company owns a line from Charlotte, N. C., southward to Columbia, S. C., and, thence southwest to Augusta, Ga., 191 miles. It is controlled by the Richmond & Danville and worked in connection with that company's system. The report is for the year ending Sept. 30.

The rolling stock consists of 21 locomotives, 9 passenger, 2 sleeping, 9 combination and 4 mail and express cars; 143 box, 9 stock, 65 flat and 11 caboose cars; 1 pay and 9 shanty cars.

The general account is as follows:

Stock		$2,578,000.00
Bonds		2,695,916.73
Bills, accounts and balance		355,262.65
Interest, etc		9,034.04
Profit and loss		108,878.26
Total		$5,747,091.68
Road and equipment	$5,213,067.04	
Real estate	61,359.59	
Stocks and bonds	204,895.30	
Supplies	91,631.87	
Balances receivable	23,949.20	
Cash	62,188.68	
		5,747,091.68

The stock and bonds remain substantially unchanged during the year. The latter consist of $195,916.73 prior lien and sectional bonds, $2,000,000 first-mortgage and $500,000 second-mortgage bonds. The company holds $97,-200 of its own stock and $192,500 of its bonds.

The traffic for the year was as follows:

Train-miles:	1881-82	1880-81	Inc. or Dec.		P. c.
Passenger	241,932	223,058	I.	18,874	8.5
Freight	207,726	223,158	D.	15,432	7.4
Service and switching	59,603	73,905	D.	14,302	19.4
Total	509,261	520,121	D.	10,860	2.1
Car-miles:					
Passenger	933,720	970,118	D.	36,394	3.9
Freight	2,742,905	2,580,742	I.	14,347	0.6
Service	228,003	130,673	I.	97,330	74.5
Passengers carried	106,841	96,535	I.	10,306	10.7
Passenger-miles	4,120,984	4,608,915	I.	487,931	11.8
Tons freight carried	179,187	167,126	I.	2,361	1.4
Ton-miles	13,897,334	12,760,391	I.	1,136,943	8.9
Av. train load:					
Passengers, No.	17.0	18.5	D.	1.5	8.1
Freight, tons	66.9	57.2	I.	9.7	17.0

The average passenger train was 3.8 cars, against 4.3 in 1880-81; the average freight train, 12.5 cars, against 11.2 in 1880-81.

The cotton traffic for the year was 32,452 tons (141,088 bales), an increase of 4,384 tons. This increase was wholly owing to large shipments of through cotton from Augusta, which counteracted the decrease from other points consequent upon a reduced crop. The average rate per bale received was 73.8 cents, against 83 cents last year.

The average reduction on freight rates was as follows: On through freight, 0.242 cent less than 1880-81; local, 0.129 cent less than 1880-81, and all freight 0.43 cent. less than 1880-81.

For passengers during the year the average rates per mile were: Through, 2.955 cents, against 3.339 in 1880-81; local, 4.281 cents, against 4.656; commutation, 2.507 cents, against 2.725; all, 3.639 cents, against 4.029.

The gross tonnage of all classes of freight was as follows:

	Passenger.	Freight.	Service.	Switch'g.
Mile-tons by engines	9,677,280	9,763,122	1,128,562	3,024 840
Mile-tons by cars	18,259,888	26,675,067	1,771,667	900,998
Total	27,937,168	36,438,189	2,900,229	3,925,838
Mile-tons of load	653,176	13,897,334	912,012	422,400
Total	28,590,344	50,335,523	3,812,241	4,348,238
Per cent. of load to total	2.3	27.6	23.9	9.7
Per cent. in 1880-81.	1.9	25.7	21.8	16.0

The average speed per hour on passenger trains was 24 miles; on freight trains, 14 miles; all other, 6 miles. The whole tonnage of trains and load moved at the rate of one mile per hour was equivalent to 1,439,828,452 tons.

The earnings for the year were as follows:

	1881-82.	1880-81.	Inc. or Dec.		P. c.
Freight	$390,163	$419,800	D.	$29,637	6.1
Passage	177,897	169,865	I.	8,032	4.7
Mail, etc	33,565	37,255	D.	3,690	9.9
Total	$601,625	$626,920	D.	$25,295	4.0
Expenses	419,632	395,938	I.	23,694	6.0
Net earnings	$181,993	$230,982	D.	$48,989	21.2
Gross earn. per mile	3,150	3,280	D.	130	4.0
Net earn. per mile	953	1,209	D.	256	21.2
Per cent. of expenses	69.75	63.12	I.	6.63	....

The large decrease in earnings is due to the low rate of freight charges occasioned by failure of the crops and the accompanying general depression of business. Had the same rates been maintained as were charged in 1880-81 the earnings would have been $29,607.07 in excess of the sum actually received.

The Atlantic, Tennessee & Ohio road (Charlotte, N. C., to Statesville, N. C., 47 miles) was leased and operated by this company during the year with the following results:

	1881-82.	1880-81.	Inc. or Dec.		P. c.
Gross earnings	$50,362	$52,711	D.	$2,319	4.4
Expenses	35,807	36,749	D.	942	2.6
Net earnings	$14,585	$15,928	D.	$1,377	8.8

The rental paid for this road was $25,000, showing a loss for the year of $10,414.52.

The following is the income account for the year:

Net earnings, as above		$181,993.25
Interest on funded debt	$175,257.82	
Interest on floating debt	15,142.71	
Interest paid city of Augusta	7,000.00	
Loss on A., T. & O. Railroad	10,414.52	
		207,815.05
Deficiency for year		$26,821.80
Settlement of old claims, etc		838.05
Total deficit		$26,659.85
Balance, Sept. 30, 1881	$27,650.31	
Insurance and material	7,881 80	
		$135,538.11
Balance, Sept. 30, 1882		$108,878.26

During the year 1,088 tons (13.8 miles) of 50-lbs. steel rails have been laid and 152,421 ties have been used in renewals; also 14,829 ties on the Atlantic, Tennessee & Ohio. The length of stringer track on the road at the close of the year was 4.54 miles. By the lease of the Atlantic, Tennessee & Ohio the company secured 2 locomotives, 9 box cars, 1 stock and 9 flats. The gauge of the latter road, formerly 4 ft. 8½ in., was changed to 5 ft. during the year, and the rolling stock was altered in conformity. On both divisions of the road new sidings to the extent of 2.05 miles were built.

The Chester & Lenoir and the Cheraw & Chester, both narrow-gauge roads, were leased towards the close of the year. Their operations are not reported.

Boston & Lowell.

This company owns a line from Boston to Lowell, Mass., 26.75 miles, all double track; a line from Salem by Lowell to Lawrence 29.75 miles, and five short branches 19.25 miles in all making 75.75 miles owned. The Middlesex Central, 11 miles and the Nashua and Lowell 14.50 miles are leased. With the latter road the company leases also the Stony Brook road 13 miles; the Wilton road, 16 miles, and the Peterboro road, 10 miles; making the total length of road operated 140 miles. The road is operated under a contract with the Concord Railroad Company by the terms of which the net income after the payment of all expenses and rentals is divided in the proportion of 60 per cent. to the Boston & Lowell and 40 per cent. to the Concord Company. The report is for the year ending Sept. 30.

The general account, condensed, is as follows:

Stock		$3,792,000.00
Bonds		3,296,400.00
Notes payable		465,000.00
Coupons, dividends and balances		75,0 7.44
Nashua & Lowell		207,.25.00
Suspense account		40,902.40
Profit and loss		614,624.54
Total		$8,491,269.28
Road and property	$7,849,339.01	
Other investments and accounts	220,696.47	
Sinking funds	49,281.25	
Materials	220,004.39	
Accounts and balance	91,930.07	
Cash	60,017.61	
		$8,491,269,28

Bonds remain unchanged; notes payable show an increase of $40,000. The stock increased $90,500.

The earnings for the year were as follows:

	1881-82.	1880-81.	Inc. or Dec.		P.c.
Passenger	$824,834	$832,130	D.	$7,296	0.9
Freight	1,170.010	988,177	I.	181,833	18.4
Mail, etc	88,397	51,265	I.	37,132	72.2
Total	$2,083,241	$1,871.572	I.	$211,669	11.4
Expenses	1,410,277	1,288,387	I.	121,890	8.6
Net earnings	$672.964	$583,185	I.	$89.779	15.4
Gross earnings, p. mile	14,880	13,308	I.	1,512	11.4
Net earnings, per mile	4,807	4.166	I.	641	15.4
Per cent. of expenses	67.70	68.84	D.	1.14	1.7

Included in expenses are $85,761 taxes, an increase of $12,010 over 1880-81. The net increase of expenses excluding this amount was $109.880.

The income account was as follows:

Net earnings as above		$672,963.77
Accumulation of sinking funds		2,381.11
		$675,344.88
New equipment	$118,544.16	
Rents	151,808 54	
Interest	226,561.29	
		490,913.99
Net revenue		$175,430.89

The payments for new equipment show an increase of $58,684.16; for rents and interest an increase of $21,491.40. Net revenue increased $22,909.62. The President's report says: "A dividend of 2 per cent. was paid from earnings for the six months ending March 31, 1882, and there has this day been declared a dividend of 2½ per cent., payable Jan. 1 next from the earnings for the six months ending Sept. 30, 1882."

The company furnishes no statement of traffic, but reports an increase in the number of miles run of 211,057 miles.

The following improvements and repairs were made during the year: An addition to the freight bridge over Charles River at a cost of $31,433.94, which was charged to expense of repairs of bridges; Hall street bridge in Lowell rebuilt and enlarged; new iron bridge on the Peterboro Railroad completed; a new car house at East Cambridge; a new floor in the train house in the Boston passenger station. The bridge over the Fitchburg Railroad at East Cambridge is being rebuilt at the joint expense of the two roads; a new passenger station is being erected at Arlington and several other improvements are contemplated. The excess of extraordinary expenses over last year amounted to $118,721.45. In addition to this the company contributed to the Northern and Central Vermont line its quota of 120 first-class long box cars, costing $77.800 which was charged to equipment account and added to its own equipment two locomotives costing $18,250; 50 coal cars costing $11,250 and two combination baggage and smoking cars costing $7,-400, all of which was charged to expense. There was expended during the year by the Boston & Lowell and the Concord companies jointly for new rolling stock the sum of $136,073.61, this company's proportion of which (60 per cent.) amounting to $81,644.66 was also charged to expense. A settlement has been effected with the Atlantic Cotton Mill, for land damages caused by the extension of the Lowell & Lawrence Branch, by payment of $140,000. The road, track and equipment are generally in good condition.

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Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subject pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published*

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WORKING EXPENSES OF THE ERIE AND THE NEW YORK CENTRAL.

Any one comparing critically the recently published reports of the New York, Lake Erie & Western and the New York Central & Hudson River railroads—the two great trunk lines of New York—will be struck by the fact that the New York Central, with about 35 per cent. more traffic (90 per cent. more passenger traffic and 22½ per cent. more freight), reports 48 per cent. more working expenses, and that its average expense per train mile, over a road with easy grades, is given as $1.19, while the Erie's was but $1.08 on a road with difficult grades and less completely provided with appliances for economical operation. Especially will it seem strange to many that the reported expense per ton per mile should be 0.60 cent on the Central, and but 0.526 cent on the Erie, though against this it must be noticed that per passenger mile the Erie's expense was 1.245 cents, the Central's 1.159, so that at the outset we may suspect that a different method of dividing expenses between passenger and freight traffic has something to do with the higher reported expense for freight and the lower cost for passengers on the Central road.

Below we purpose to examine in some detail the items of expenses on the two roads, to discover, if possible, in what particulars one road is more cheaply worked than the other, and the reasons for it so far as they can be traced from the facts at command.

The following are the working expenses as reported to the State Engineer and Surveyor by the two companies for the year ending Sept. 30, under the three general heads of the report, together with the traffic train mileage:

Train miles:	N. Y. Cen.	Erie.
Passenger	5,448,929	3,546.055
Freight	10,912,064	8,569,938
Total	16,360,963	12,115.993
P. c. passenger	33.3	29.3

	Total.		Per train mile.	
Expenses:	N. Y. Cen.	Erie.	N. Y. Cen.	Erie.
Maintenance of road	$4,079,585	$2,231,878	24.93 cts.	18.42
Maintenance of equipment	3,666,764	2,160.120	22.41 "	17.83
Operating road	11,649,625	8,696,096	71.20 "	71.77
Total	$19,395,974	$13,088,094	118.54 cts.	108.02

It is thus in the maintenance expenses that the difference in expenses per train mile consists, the New York Central having spent a third more per train mile for maintenance of road and 26 per cent. more for maintenance of equipment. Very likely the Erie required less for maintenance, because a very much larger proportion of its rails, ties and rolling stock were comparatively new. Within a few years this road has been thoroughly renewed, and it was not likely to need as much for renewals as the average will be. So far as rails are concerned, we have the amount used—6,600 tons on the New York Central and 4,590 on the Erie. This sufficed to renew about 2½ per cent. of the Central's tracks and 1.9 per cent. of the Erie's, at which rates the Erie would be renewed in 52¼ years and the Central in 40¼. Evidently no such life of rails can be hoped for under the heavy traffic of these roads; but the renewals will, on the average, be much greater, as will be found when the rails have been in track longer.

When we come to examine the cost of rails used for repairs, we come upon one of the radical differences in the accounts of the two roads which makes it impossible to draw definite conclusions from comparisons. The Erie charged to expenses $104,807.24 for the 4,590 tons of rails it used for repairs; for the 6,600 tons used on the New York Central $417,042.48 is charged. That is, the Erie, like most other companies, charged the cost of the rails *less the amount received for the old rails;* while the New York Central charged to expenses the full cost of the rails and entered under miscellaneous earnings all the receipts for old rails. In this way, the New York Central is shown to have expended 2.55 cents per train mile for rail renewals; the Erie but 0.86 cent. As the New York Central's consumption of rails *per train mile* was but 5 per cent. more than the Erie's, it is probable that, charged in the same way, its expenditure for rail renewals was not more than about 0.90 cent. per train-mile, against the Erie's 0.86 cent.

Now this difference in the methods of charging follows throughout in comparing maintenance expenses; though in scarcely any other item do the receipts for old materials form so large a proportion of the cost of the new. When we see that the Central reports miscellaneous receipts, other than earnings from passengers, freight, mails, and rents, amounting to $3,149,761, while the Erie reports but $1,501,482 of such other receipts, including $780,655 which it does not count as railroad earnings at all, we see how great a difference in earnings and expenses may be made by different methods of account-keeping. We have heretofore noted the item of car service (mileage paid for use of foreign freight cars), which on the New York Central, by its method of charging, adds $1,466,761 to its working expenses, while by the Erie's method the expenses would be charged with but $399,647 of this amount, which is the excess of the payments over the receipts for car hire. This goes under expenses for operation. The Erie received more than it expended under this head last year, and so charged nothing to expenses on this account. The difference in this one item amounts to very nearly 9 cents per train-mile (8.97 cents), and allowing for it, the New York Central's expense per train-mile, other than that for maintenance, was 62.23 cents, against the Erie's 71.7. That is, there would be this difference if the expenditure for car-hire were struck out entirely. It is in fact an expense like that for interest on capital, but on a road which is adequately equipped or approximately so, the debit balance of such expense is properly enough charged to working expenses. Its real nature becomes evident enough, when, as on the Atlantic & Great Western some years ago, most of the equipment of a road is supplied by a rolling stock company or otherwise hired; then the use of equipment becomes an enormous proportion of the expenses, while by a proper expenditure of capital, the expense on that account may be stopped entirely or converted into earnings, as on the Erie itself since it has increased its stock of freight cars from 11,656 in 1878 to 28,881 in 1882.

If we include the balance of expenditures over receipts for car hire, the New York Central's expenses per train mile under this head was 2.44 cents, instead of the 8.97 cents which it charged to expenses.

We have got far away from the maintenance expenses which we began to compare, however. Repairs of road-bed are a much more important item than repairs of rails; the expenditures on this account were eight times as great on the Erie and 5½ times as great on the Central, and the Central's were 41 per cent. more than the Erie's In this matter we must remember that, while the New York Central has but 10 per cent more *rails* than the Erie, it has nearly 38 per cent more *track*, as the Erie has third rails equivalent to 486 miles of track. It costs more to keep up a road with three rails, doubtless, than one with two rails; but not so much as road with the same length of rails in double, treble or quadruple tracks. If the Erie's third rails were on a separate road-bed, they would require ties and earthwork for 486 miles more than it has had to maintain. So we compare the expenses of maintaining road (all but cost of renewing rails) per mile of *track*, rather than per mile of *rails*.

These expenses on the two roads were:

	N. Y. Cen.	Erie.
Miles track	2,657	1,934
Total	$2,257,943.57	$1,322,787.43
Per mile of track	$850	$684
Per train-mile	13.80 cts.	10.92 cts.
Train miles, p. mile of track	616	626

The Erie, it appears has nearly the same mileage of trains over its tracks as the New York Central (a little more); per train-mile last year the New York Central's expenditure for maintenance of road was 26½ per cent. greater. There probably is no great difference in charging the items by the two companies. It should be said, however, that the Central's expenditures under this head were unusually large last year—40½ per cent. more than the year before. These expenditures are likely to vary greatly with the requirements for the renewals, etc., and the weather, snow storms and floods sometimes immensely increasing the expenses. Last year was a very favorable one so far as weather is concerned. Both roads show an increase over the previous year in the total expenses of maintaining road, however, the Erie's being $132,972, or 6.3 per cent., the Central's $644,900, or 18.8 per cent., though both show a decrease in train mileage.

One of the items under this general head shows a great difference, namely, taxes on real estate. These were:

	N. Y. Central.	Erie.
Total	$973,573	$247,786
Per mile of track	369	128
Per train-mile	5.95	2.31

Thus in this item alone the Erie has the advantage by 3.64 cents per train-mile—an advantage partly due to the fact that its main terminus is not in New York, where the Central has real estate worth several millions of dollars. Not that this real estate is not valuable property, but that it brings with its advantages a very heavy tax bill.

The total maintenance of road expenses on the New York Central we found to be 6.51 cents per train mile more than the Erie's; about 1.65 cents of this seems to be due to a different method of charging cost of rails used for repairs, and 3.64 cents to higher taxes, leaving a difference of 1.32 cents, or about 6 per cent., which is not very important.

We will pass now to maintenance of equipment. The expenditures on the two roads on this account were:

	N. Y. Cen.	Erie.
Total	$3,666,764	$2,160,120
Per train mile	22.41	17.83

The chief items under this head are:

	N. Y. Cen.	Erie.
No. of engines	632	564
Repairs engines and tenders.	$1,066,621	$630,971
" per engine	1,688	1,119
" per train mile	6.52 cts.	5.21 cts.
No. of cars	25,793	20,321
Repairs cars	$2,279,434	$1,073,006
" per car	$88.00	$36.60
" per train mile	13.87 cts.	8.86 cts.

Here again we have direct comparisons vitiated by the difference in accounts. But receipts for old materials can hardly make much of a figure in the locomotive expenses, nor be so large a proportion of the cost of car renewals as is the case with rails. The difference in cost per engine is enormous—the Central spending 50 per cent. more than the Erie; but the Central reports the average distance run per engine (excluding switching, etc., in both cases) to have been 25,888 miles; on the Erie it was 21,480 miles; and thus while the Central's expense per engine was 50 per cent. more than the Erie's, per train mile it was but 25 per cent. more. That is a considerable difference, however, probably not largely (though partly) due to the difference in account-keeping. A larger part of the Erie's than of the Central's motive power is new, and that will probably account for part of the difference, possibly the whole, though the Central too had a considerable number of new locomotives, and its whole motive power at the beginning of the year was presumably in the highest state of efficiency.

In cars the differences are still more decided, but here good reasons for it are known to exist. In the first place sales of old material (as old wheels) are a not unimportant proportion of the cost of car renewals; and no allowance being made for this on the Central, the expenses charged to this account are enlarged by so much. But the larger part of the difference is doubtless due to the newness of the Erie's stock, about three-fifths of which has been acquired since 1878. Very significant is the expenditure per car—$88 on the Central and only $36.60 on the Erie. It is not possible to repair and renew a stock of cars at so little as $37 per car per year; without any repairs this expenditure would hardly renew the cars once in 15 or 18 years. But of the 18,000 cars which the Erie has acquired since 1878, few cars can have required replacement, and not very many extensive repairs. We see that the Erie's stock of cars is about 14 per cent. greater than the New York Central's; yet its expenditures for car maintenance was $1,206,428, or 53 per cent. less, and its expense per train mile under this head was 5.01 cents, or 36 per cent., less. Yet the Central's expense for car maintenance was 14 per cent. less last year than the year before, when it was $115 per car and 15.33 cents per traffic train mile. Then, as in 1880, the renewals were probably much above the average.

In these two items of maintenance of engines and cars we find 6.32 cents more per train mile expended by the New York Central; in the items of repairs of shops, tools, etc., and of incidental expenses connected

with the shops and machinery department the Erie expended more by 1.74 cents per train mile, so that the total expenses for maintenance of equipment is, as given above, 17.83 cents per train mile on the Erie and 22.41 on the Central.

The expenses for operating road, as we have seen, if the method of charging for car hire were the same on both roads, would be 71.77 cents on the Erie and 64.67 on the Central. The chief items on both roads are as follows, in examining which the reader will bear in mind that the Central's train mileage was a third more than the Erie's:

	N. Y. Cen.	Erie.	Central—More.	Central—Less.
Gen. office exps....	$80,071	$382,961	.....	$302,890
General officers....	186,303	144,415	$41,888	.....
Agents and clerks.	1,320,456	1,268,339	52,117	.....
Labor, loading and unloading freight	1,505,844	1,637,490	.....	131,646
Porters, watchmen, switchmen, and flagmen.....	708,241	471,856	236,385	.....
Conductors, baggagemen and brakemen.	835,915	1,240,367	.....	404,452
Enginemen and firemen...	1,348,481	1,057,558	290,923	.....
Fuel.....	2,382,755	1,287,466	1,095,289	.....
Car hire..... ...	1,466,761	.. ..	1,466,761	.....
Lighterage and cartage..... ...	783,261	.....	783,261	.....
Total reported.	$11,649,625	$8,696,096	$2,953,529	.....

Thus of the entire excess of the Central's charges more than three-fourths consists of two items which do not appear in the Erie's expenses at all—in car hire and lighterage and cartage. The former we have already explained, the latter, or its equivalent, is doubtless charged under some of the other heads in the Erie's accounts, increasing its items for loading and unloading freight and for some other services. The most notable differences in the whole list, perhaps, are those which show the Erie, while paying 21½ per cent. less for enginemen and firemen paid, 48⅛ per cent. *more* for other train hands than the New York Central, which had 35 per cent. more traffic and train mileage. The figures per train mile are, in cents:

	N. Y. Cen.	Erie.
Conductors, baggagemen and brakemen.....	5.11	10.23
Enginemen and firemen.....	8.24	8.73
Switchmen, porters, etc	4.33	3.90
Agents and clerks.....	8.07	10.47
Loading and unloading freight....	9.20	13.80
Total of above..	34.95	47.13

In these items, all for labor, the Erie appears to have spent 35 per cent. more per train mile than the Central, and the aggregate expenditure of the Central under these heads was but $43,327 (8 per cent.) more than the Erie's. But in some of the Erie's charges under these heads we may have part of the service which the Central charges to lighterage and cartage. We cannot, however, account for the fact that it spends twice as much money per train mile for conductors, baggagemen and brakemen the New York Central.

The Erie's great advantage in fuel has always been known, but we doubt if it has been duly appreciated. For this item alone its expenses were nearly $1,100,000 less than the Central's, and per train mile the cost of fuel was but 10.63 cents, against 14.76 on the Central. As the Erie not only has steeper grades, but larger average freight train loads than the Central, we should expect it to consume more fuel per train mile: if the same, it must give 30 per cent. less per ton for its coal. It gets its coal almost entirely, we believe, on its own branches, but to many parts of its road the distance the coal has to be transported is not much less than to the Central. But the Central has to pay freight on the coal, while the Erie carries it over its own road, without charge but not without expense. The actual difference in cost of fuel delivered on the engines, therefore, is probably not quite so great as these figures would indicate. It is great, however, and the difference may have had weight in determining Mr. Vanderbilt to make connection with the Clearfield coal district.

Although this examination has not enabled us to determine just what are the actual comparative expenses of these two roads, and has shown that some of the important ones are charged so differently that a direct comparison has no value, it has, we thing, done something to show why the reports as made show an expense of $1.19 cents per train mile on the New York Central and but $1.08 on the Erie, and makes it probable that if charged in the same way the Central's would be smaller rather than larger than the Erie's. In fact, the Central's method of reporting does not do the management justice when comparisons are made with other roads. Its peculiarities in charging expenses are of a kind to make the working of the road appear less economical than it really is.

But that the Erie should be able to do its work as cheaply as the New York Central, or even nearly so, is a great triumph for the management—an achievement which, five years ago, most people considered impossible. The recent progress made by both companies, not only in expenses, but in traffic, earnings, etc., is a matter of great interest, and it was to discuss this and not the difference in expenses that this article was begun. It soon appeared, however, that an important error would be made by accepting the expenses charged in the reports as absolutely equivalent on both roads; and this made desirable the examination of the details which we have given above, and which will be of use in all other comparisons of the two roads having reference to their profits as well as their expenses, and their course from year to year.

THE VENTILATION OF RAILROAD CARS.

Observations and counsel on this subject are always in order, especially in cold weather, because the ventilation of the great majority of passenger cars is then simply excrable. One cause for this, which it is very difficult to overcome, is that "the natural man abhors ventilation." Pure air he despises and bad smells do not offend him. This is perhaps due to the fact that the sense of smell has become blunted in a large proportion of the community through the immoderate use of tobacco or strong drink or both. Habits of cleanliness and a considerable amount of good breeding are required to enable the average human being to distinguish pure air from impure air. Air seems to produce only two sensations on common people, that of cold and warmth. By common people are meant those who are not habitually clean, and whose senses are not acute, either through lack of cultivation or by such habits as have been named. A dog which can scent game well we say is of a good breed. The sense of smell is some indication of the breeding of men and women as well as of dogs. The fact that the majority of people who travel are quite indifferent about the purity or foulness of the atmosphere they breathe is, as has been said, one of the difficulties in the way of the ventilation of cars.

The next obstacle in the way is the general ignorance of railroad employés, including car-builders, of the methods which must be adopted to secure good ventilation. The belief is almost universally entertained that to ventilate an apartment all that is needed is to make one or more openings in or near the ceiling, and that if this is done the bad air will go out even if none that is pure is admitted to take its place. Unfortunately, bad air, like bad company, will not always leave us if we simply make a way for it to depart.

In this case it seems as if the very simplicity of the problem were the reason why it is so little understood, and an obstacle in the way of securing the attention of those who should provide adequate means for the ventilation of cars. It is because of this that a restatement of the theory of ventilation of the most elementary kind—a sort of primer of ventilation—will be given in this article. It might, in fact, be presented in easy words, somewhat as follows: Is this a car? It is. Are there any passengers in it? There are. Has the air in it a bad smell? It has. Why has it a bad smell? Because the passengers in it have breathed it over and over again. Why do the passengers breathe it so often? Because most of them do not know better, but also because the man who built the car did not provide any way for fresh air to get into it in cold weather. Did he make any openings in the car for the bad air to get out? Plenty of them, in the clear-story and along the side of the car. Why does not the air go out of these openings? Because air is like a good many people, it will not go unless it is pushed or forced. If the air in the car is warmed will it not rise and escape through the openings near the top? A little air will escape in that way, but if it does an equal amount must enter the car to take its place. If there is no other way for the air to enter it must come in through the same opening that the warmed air is escaping from, just as the air which takes the place of the whiskey when a barrel is inverted must enter that vessel through the bung-hole from which the mischievous liquid is flowing. How can you make the whiskey flow more freely? There are various ways, such as temperance legislation, political conventions, etc., but in the special case of the barrel referred to, by making an opening which will allow air to enter and take the place of the liquid. Its outward flow from the bung-hole will then not be interrupted by the passage of air inward. How does this illustration apply to the ventilation of cars? In this way: if any air passes out of the openings provided for that purpose, near the top of a car, if there are no other means for an equal amount to enter, it must come in through the same orifices that the bad air escapes from. The movement of the air both inward and outward will therefore be very slow, but if, as in the case of the barrel, an opening is provided for air to enter the car, the current which escapes will be uninterrupted and so will that be which enters, and thus, there will be a rapid change of the bad or re-breathed air for that which is pure.

Having stated the elementary principles, the catechetical form will be abandoned. It will have served its purpose if it has made clear the need of having some provision for the admission of air into a car.

The fundamental principle of ventilation is that of providing means for the *admission* of an adequate supply as well as for the escape of that which is impure. It then becomes a question of the specific means which should be employed for this purpose. The position of the exhaust ventilators is a matter of very little importance, provided they are not in the front end of the car. The opening for the supply of air should be where the air has a tendency to enter. When the car is in motion this obviously is at the front end. But, as has been pointed out in these pages a great many times, if there is a current of cold air flowing into a car it is apt to be a source of discomfort to the occupants who are in any way exposed to it. It is therefore important that the air should be at least partly warmed as it enters. The simplest way of doing this is to put the supply ventilator in the end over the window next the stove. In this position it is high enough to admit the least quantity of dust from the outside, and it is protected by the roof over the platform from the smoke and cinders. By placing some kind of deflector on the inside so as to direct the entering current upward, the cold, fresh air will be mixed with the heated air from the stove, and will be distributed through the car without discomfort to any one.

If such openings are provided, it is important that they should not be too large. On the Pennsylvania Railroad the supply ventilators are placed in the end of the clear-story, but are so large that when they are open in cold weather it is impossible or difficult to keep the car warm. An opposite error is sometimes fallen into when an end ventilator is located in the position described over the window. As soon as the car-builder has put it there he sometimes seems to become alarmed, and first covers it outside with wire netting or a perforated plate. Then he puts a register in the opening, which is of course needed to open and close it. Finally he adds a grating inside over the register. In other words, after providing for the admission of air he goes to work to obstruct the current which should flow through the opening. An opening the width of the window and from 6 to 10 in. high in this position gives good results if it is kept open. With such a provision at the front end of the car, and with a few of the exhaust ventilators open, the air will never become very impure while the car is in motion.

As an example of bad ventilation, the cars used on the local trains on the Morris & Essex Division of the Delaware, Lackawanna & Western Railroad may be referred to. A short journey in them on New Year's day gave an opportunity of smelling their inoperativeness. For these cars a considerable amount of money has been expended for ventilation in the clear-story and in the sides of the car over the windows. These are all carefully guarded with gratings, apparently for the purpose of preventing passengers from knowing whether they are open or closed. The car was filled with people, every seat being occupied. Before the car started from the station the air became offensive, and before the end of the journey, which did not occupy an hour, it was in such a condition as to be dangerous to health if breathed for any considerable time. The Delaware, Lackawanna & Western Railroad management is not noted for liberality, but in this case a very considerable amount of money had been spent for a large number of ventilators which were almost useless. If the cost of the wretched gratings over the inside of the ventilator openings had been expended for two registers, and if they had been placed over the end windows, there would be no difficulty in keeping the air in the car pure enough to breathe without much risk to health. If two of the present almost useless ventilators were taken down and placed in the ends, as described, it would do more to ventilate the car than all of them now do in their present position. The faith in the efficiency of the old-fashioned clear-story ventilator is a superstition, but is still tenaciously adhered to by many car-builders. Simple movable sashes in the clear-story, as used on the Pennsylvania Railroad, and in the Pullman cars, do not cost one-fourth as much as the ventilators and are much more effective in accomplishing the purpose for which they are intended.

It may be said that a sliding sash in the doors of cars answers the purpose for which the end ventilator is intended. It is true that it does, but if it is open the current of cold air does not pass over the stove and is apt to cause discomfort to some of the occupants of

the car. There is besides the fact that many people feel uncomfortable if they can see any way for fresh air to enter a car or other apartment which they occupy, like the old lady who objected to being out of doors because there was too much fresh air there.

To sum up then, it may be said, that the most effective way to ventilate a car is a very simple one, and consists in providing an opening with about 100 square inches area over each of the end windows next the stoves and arranging it so that it can be opened and closed with a register or other convenient means. Next, arrange some or all of the windows in the clear-story so that they can be opened on hinges, and finally instruct the conductors and attendants in the cars to keep the end ventilators open at all times, excepting in the very coldest weather. A notice over or under the end ventilators to read somewhat as follows: IF YOU WANT TO BREATH PURE AIR KEEP THIS VENTILATOR OPEN, will help to accomplish the final recommendation.

This method of ventilation is the cheapest known, and also the most effective in the long run, and has the advantage that it can be applied easily to old cars. The latter fact leaves the Delaware, Lackawanna & Western Company without excuse for the execrable ventilation of some of the cars it is using.

In conclusion, the importance of the notice over or above the end ventilators is urged. Without it they are apt to be closed and to remain so. The notice itself, if prominent enough to be read from any part of the cars, has a perpetual educating effect on the people who travel in them, and those who attend to them, and will do a great deal to overcome the prejudice which so many people have to breathing air which is not cooked in some way.

American Experience in Preserving Timber.

The preservation of timber is a subject which certainly deserves more attention than it has received from American railroad companies, and which will become more and more important as the timber supply is reduced and the cost increases. Indeed, there are many parts of the country now where the cost of ties delivered must be greater than in most European countries, as the addition of the cost of transportation by rail for a thousand miles or more to the price in the woods makes a great difference. Already we understand that the question of the use of iron ties in New Mexico and Arizona has been seriously considered. But even close to the forests the difference between a tie lasting 15 years and one lasting seven years is too important to be neglected, especially as the cost of the work of replacing ties by itself is no trifle.

A committee of the American Society of Civil Engineers, of which Mr. Octave Chanute is Chairman, has been for some time engaged in investigating this important subject, and a preliminary report made by it has just been published.

The information which it had collected previous to reporting was large in amount, but much of it indefinite, for which reason the committee put off making a final report until after further investigation. One of the chief difficulties connected with the subject is the necessity of experience covering a long period in order to judge of the effectiveness of a process, while, if the experience has been long enough to fairly test the process, it is not always possible to learn definitely how the process was conducted, which often makes the difference between success and failure.

Some information was obtained by the committee concerning 88 different experiments in preserving timber, the oldest of which dates back to 1839, concerning which Mr. Wm. P. Judson, member of the society, wrote a short paper which is presented with the committee's preliminary report. It appears that in building Fort Ontario at Oswego, N. Y., "kyanized" 12 × 12 and 6 × 12 in. timbers were used for the revetments of earthworks. There were 92,000 cubic feet of such timber used, with some pieces larger and smaller, all treated by immersion for 14 to 21 days in a solution of 1 lb. of corrosive sublimate to 15 gallons of water. The process and the plant are quite fully described in the paper. The cost was about $6 per 1,000 feet, board measure, which was about the same as the original cost of the untreated timber. The wood chiefly used was hemlock, with a few sticks of basswood, beech and maple. The work was not completed until 1843, and in 1844 the officer in charge reported that some of the timbers already showed signs of decay.

Mr. Judson reports that in 1882 inspection of this work showed that nine-tenths of the shorter timbers were still standing, and about two-fifths of the upper halves of the larger timbers, with their cap timber, were still in position, the lower parts having been removed for other constructions. Of 100 standing timbers, whose lower ends were still below the surface, 60 seemed entirely sound, except for about 6 ft. from the surface upwards; the other forty were more or less rotten throughout their length. Where these timbers have been moved free from the earth back of them, the side towards the earth seems as sound as that towards the air.

Of anchor timbers 18 in. × 18 in. 3 ft. below the surface, 90 per cent. were sound; of those below them, which were moister, about half were sound at their exposed ends. All these timbers were hemlock. What beech or maple could be found was wholly rotten except an interior shell about ¼ in. thick.

Mr. J. B. Francis, Past President of the Society, reports experience with kyanizing at Lowell, beginning in 1848, for which, two years later, "burnettizing" (saturating with chloride of zinc) was substituted. By 1862 this latter was found so much less effective that resort was had to kyanizing again. This, Mr. Francis says, does not completely prevent decay, but 30 year's experience has satisfied him that the benefit far exceeds the cost of the process.

Mr. J. W. Hobart, General Superintendent of the Central Vermont Railroad, writes the committee that in 1856 his road established works for saturating timber with chloride of zinc *under pressure*—apparently the same process now common in Germany and described in these columns some two years ago. This is the first instance given of this process in this country. Mr. Hobart says this plant was in use some four years, "but it was so much work to get through with such large quantities of timber as are used upon a railroad that it was thought best to abandon the work." But some years ago an old side-track, which had been unused for years and was nearly covered with earth and grass was removed, and the burnettized hemlock ties were found to be nearly sound, having been there nearly 25 years. It would be interesting to calculate how much money this company would have saved if it had not thrown away its plant, but treated all its ties like those in this side-track. Apparently it would hardly have had to remove any ties from 1860 to 1882; though it will not do to assume that ties in main track would have lasted as long as these in a side track which had been unused for several years.

Perhaps the most definite and satisfactory statement sent the committee is that by Mr. M. Alexander, Roadmaster and Engineer of the Chicago, Rock Island & Pacific Railway. In November, 1866, he laid 2,000 hemlock, pine, tamarack and cedar ties treated with chloride of zinc in the main track west of Englewood (within a few miles of Chicago and under a very heavy traffic). Most of them were hemlock. In the summer of 1881, after 15 years service, three-fourths of these ties were still in the track, and Mr. Alexander thought they were good for three or four years more. Those taken out were found sound and solid in the centre, and decayed on the surface to a depth of only ½ to ¾ in. The rails had not worn into the hemlock more than into oak, and the hemlock holds spikes as well as oak. The pine and cedar ties had disappeared. The tamarack lasted about the same as hemlock. Mr. Alexander has found untreated hemlock to decay first in the centre.

In 1872 this company laid 5,000 creosoted hemlock ties in second track a few miles further from Chicago. Mr. Alexander does not think that they were thoroughly treated; they were sound at bottom, but badly decayed on the surface in 1882, and the rails cut them much more than the hemlock ties treated with chloride of zinc. From 30 to 50 per cent of these creosoted ties laid in 1872 were in the track in the spring of 1882, and those would probably be removed the next summer.

Mr. Alexander counts the life of untreated hemlock ties in sand or gravel ballast as not more than five years; thoroughly treated with chloride of zinc he believes they will last 15 years.

Mr. Hugh Riddle, President of the Rock Island Company, reports that it had in March, 1882, still in fair condition, a Howe truss bridge, of eight 150 ft. spans, of burnettized timbers, which was erected in 1830, and was to be rebuilt in the summer of 1882.

Mr. J. W. Putnam reports at length experience in creosoted bridge timbers on the New Orleans & Mobile Railroad. The experience has not been long, but piles in situations where, untreated, they would be cut through by the teredo in a year, when creosoted have not been attacked at all.

The Houston & Texas Central seems to be the only railroad in the United States which has a plant for preserving timber. Mr. M. G. Howe, Division Engineer and Superintendent, reports that it has a plant for removing the sap, etc., by the application of superheated steam and the injection of dead oil under pressure, and that within two years it has treated about 150,000 cross ties, chiefly of a short-leaved Texas pine which without treatment will not last more than two years. It is so porous that when thoroughly seasoned it will readily take up more than two gallons of oil per cubic foot. Usually about five gallons per tie are used, but the ties are not then completely saturated. Some such ties so treated in 1875 were put into the cylinders in lengths making two ties, and then cut in two. Some were completely saturated, and in some a core 2 to 4 in. in diameter had not been penetrated by the oil. After seven years' service these ties are all perfectly sound, except the exposed ends of the cut ties at the core which the oil did not reach. The decay began very soon, and penetrated, at that end only, in proportion to the diameter of the uncoiled core. Where this diameter was 4 in., the decayed hollow was 30 in.; where it was 1 in., the decay extended about 11 in. inward.

Mr. Howe says this timber was hardened by the treatment and did not last spring show any serious wear. Untreated it would have been utterly worthless in two years.

Though the data given in this preliminary report are somewhat scanty, they seem quite conclusive as to the effectiveness of treatment by three processes, and so to confirm the European experience, which seems to be all one way. The Houston & Texas Central experience indicates that wood which in its natural state is utterly worthless may be utilized if preserved, and this in some parts of the country may save importations from distant forests, and much timber valuable for other purposes. There are great quantities of hemlock in some parts of the Northwest where the white pine is nearly exhausted and oak very dear. If preserved hemlock can be made to last 15 years—probably twice the average life of an untreated oak tie—it may become the chief tie timber of the Northwest.

Data as to the cost of treating timber or of the plant by which it is done are not given in this preliminary report; but the reports of cost in Germany are very definite, and show that the expense cannot be so great here that our roads would not be justified in procuring apparatus even by way of experiment, where they cannot get the work done for them economically, as may be done in some parts of the country. The difference between an average life of seven and 15 years for ties is no trifle. On the Pennsylvania Railroad east of Pittsburgh and Erie (1,888 miles of road) 1,157,230 new ties were laid in 1881; and the average life on this exceptionally well ballasted road is probably not more than seven years. If half of these could be saved and with them the cost of carrying them and putting them in, the saving would be perhaps enough to pay 1 per cent. on the company's stock, and at least it would warrant a considerable addition to the original cost of the ties.

In the final report of the committee, which is engaged in a work of great practical importance to the railroads, we will probably have more information as to processes, plant and cost.

A Heavy Winter Grain Movement.

The grain movement has been taking an unusual course during the past month, though it is not difficult to understand it when we call to mind the peculiar circumstances. Usually the maximum receipts of the Northwestern markets are during the two or three months after harvest. Then in December the receipts become comparatively very small, and do not revive again until near the opening of navigation in the spring. In the days when by far the larger part of grain moved eastward by lake and canal, this was inevitable. After November it was not possible to receive much more than the elevators at the lake cities would hold. But now for several years there have been considerable rail shipments in winter even when rates were highest; and when rates were demoralized, as for the first few months of 1878 and 1879 and all through last winter, the receipts have often been considerable, as there was little or no advantage in holding until navigation opened. But this winter we have the unprecedented fact that receipts have grown *larger* since navigation closed, and in the last week of the year were nearly the largest of the entire year. The course of receipts in the last half of the year will be shown by the following statement of the average receipts per week in each month from July to November, and the actual receipts in each of the last four weeks of the year, for five successive years:

	1878.	1879.	1880.	1881.	1882.
July	4,114,774	4,315,354	6,879,830	5,500,393	4,438,131
Aug	8,076,652	6,643,079	7,802,131	7,090,233	5,764,262
Sept	6,507,256	7,027,768	7,476,382	6,823,927	5,820,710
Oct	5,321,858	7,740,221	8,831,264	5,026,568	5,362,314
Nov.	3,556,827	4,858,338	5,691,532	3,415,332	5,230,442
December:					
1st week	4,047,916	4,170,956	4,852,388	3,178,051	5,260,607
2d "	3,834,457	3,611,180	5,012,357	3,524,829	4,658,829
3d "	2,972,744	3,640,974	3,687,228	3,515,916	4,586,228
4th "	2,548,745	3,385,013	2,802,609	2,517,143	6,433,124
Average	3,350,965	3,827,031	4,088,663	3,183,985	5,234,697

We see here that the receipts in August, September and October have usually been very much larger than in November, and the receipts in November were much larger than those in December in 1879 and 1880; and uniformly until 1882 receipts were much less in the last week of December than in the other weeks of that month. In 1881 there was no reason why shipments should fall off on account of the close of navigation, because the rail rates continued as low as the water rates had been; the reason why shipments were very light in November, as well as December, was that there was an unusually small crop of grain to ship. But this year we find almost a reversal of the usual course of things; receipts, though larger than they had been earlier in the year, were not so larger as usual in August, September and October; but instead of a falling-off of 1,800,000 bushels, as in 1878, from October to November, or of 2,900,000, 3,200,000, or 1,600,000 bushels as in 1879, 1880 and 1881, respectively, there was a decrease of but 132,000 bushels. And instead of a further large falling-off in December, as in other years, the receipts were not much smaller in December than in any of the fall months; and instead of receipts dwindling from the first to the last week of December, and those of the last week being the smallest since harvest, as has been usual, the last week's receipts were not only the largest of the month, but larger than any week's receipts in September and October, and equaled in only three weeks of the entire year.

The special cause of the large December receipts we have heretofore pointed out; it was the lack of corn for feeding throughout the country which compelled shipments just as soon as the new corn was in condition to market. The country has probably never before been so bare of corn. And now, after a December of extraordinary receipts, the stocks in store are still but half as great as at this time last year and the year before, and the stock in New York harbor is but one-fourth of what it was last year. For so far the shipments have been absorbed by the domestic consumption, and there has been little to spare for export.

This fact, that corn is scarce here and in Europe among consumers, together with the fact that the crop is now gathered and in most parts of the country marketable, make it probable that we shall have an exceptionally heavy winter movement of grain; the comparatively light receipts until December seemed not to agree with the reports of a good harvest, the winter may make the total movement

after June nearly equal to that after the harvests of 1879 and 1880. We are now approaching a time when receipts at the Northwestern markets, and also shipments thence, were extraordinary last year, stimulated by low rates and the expected advance in them. Still, under this stimulus the Northwestern receipts but once reached 5,000,000 (5,297,000 bushels in the last week of January), while this year, with the rate about three times as great, we have 6,443,000 bushels received in the last week of December.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Alma & Little Rock.—Completed from Alma, N. C., southwest to Alfordsville, 12 miles.

Des Moines, Osceola & Southern.—Extended from Osceola, Ia., south to Davis City. 29 miles. Gauge, 3 ft.

Gulf, Colorado & Santa Fe.—Track laid on the *Houston Branch* from Alvin Junction, Tex., northwest 27 miles.

Kansas City, St. Joseph & Council Bluffs.—A branch is completed from Forest City, Mo., west by north to Rulo, 9 miles.

Markesan & Brandon.—Extended from Granite Quarry west to Markesan, Wis., 5 miles.

Nashville & Tuscaloosa.—Extended from Graham, Tenn., south to Duck River, 8¼ miles. Gauge, 3 ft.

New York, Ontario & Western.—Extended from Middletown, N. Y., eastward to Cornwall, 25 miles.

St. Louis & San Francisco.—The *Arkansas Division* is extended from Van Buren, Ark., southwest to Fort Smith, 6 miles.

San Luis Obispo & Santa Maria Valley.—Extended from Santa Maria, Cal., south by west to Los Alamos, 15 miles. Gauge, 3 ft.

Southern Pacific.—The *Mohave Branch* is extended from Calico, Cal., eastward 45 miles.

This is a total of 181¼ miles, making 10,328 miles so far reported for 1882.

New track is reported laid in the present year as follows:

Gulf, Colorado & Santa Fe.—Track laid on the *Houston Branch* into Houston, Tex., 2 miles.

This is a total of 2 miles thus far reported for 1883.

CHICAGO RAIL SHIPMENTS EASTWARD for the last ten days of December last were 97,773 tons, of which 12.8 per cent. went by the Chicago & Grand Trunk, 23.8 per cent. by the Michigan Central, 24.8 by the Lake Shore, 14.4 by the Fort Wayne, 15.5 by the Pan-handle, and 8.7 per cent. by the Baltimore & Ohio. Thus the two Vanderbilt roads together carried 48.6 per cent. (against the 45½ per cent. which is their share), and the two Pennsylvania roads 29.9 per cent., against 35½ per cent. The two Vanderbilt roads together, until recently, were considerably behind the percentage to which they are entitled under the agreement dating from March 13, but they have been making it up of late, and at the end of the year the number of tons which the different roads were over or short of the proportions to which they are entitled of the business carried since March 13 were:

Over.	Tons.	*Short.*	Tons.
Chicago & Grand Trunk.	8,614	Lake Shore..... ...	33,070
Michigan Central.....	27,237	Pan-handle.....	4,778
Fort Wayne..... .	12,026	Balt. & Ohio	10,029

Thus the two Vanderbilt roads together were but 5,833 tons short of their proportion at the end of the year, an average of but 139 tons per week for the period covered, which, as freight has been going recently, will soon be made up. The two Pennsylvania roads are 7,248 tons over their proportion.

The receipts in the last ten days of December were at the rate of 73,330 tons per week, and the shipments in the last week of December for four successive years have been:

	1879.	1880.	1881.	1882.
Tons.....	35,148	44,081	59,074	73,330

Thus the shipments in 1882 were 24 per cent. more than last year, 66¼ per cent. more than in 1880 and 109 per cent. more than in 1879. At the rates current the earnings from these shipments must have been about at the rate of $298 this year for every $100 last year, $209 in 1880 and $181 in 1879. The shipments of the week were exceeded in the third and fourth weeks of January and the first week of February in 1882 (when the rates were extremely low, and it was known that the railroad war would soon end), twice (in April and in the first week of the railroad war in June) in 1881, and twice in March, 1880; but in no other weeks in the history of the traffic.

The shipments for seven successive weeks have been:

Week ending—						
Nov. 14.	Nov. 21.	Nov. 30.	Dec. 7.	Dec. 14.	Dec. 21.	Dec. 31.
44,721	50,401	57,206	23,976	49,335	60,294	73,330

It should be said that the receipts here reported are only those made at the rates which went into force Dec. 1, while a very large part of the shipments in the first week of December, and a considerable quantity afterward, were billed at the old rates, as if received for shipment west of Chicago before December. How much this was we cannot now tell, but it must have been a large amount, as the shipments billed at Chicago alone were much more in one or two weeks than those given here for the total shipments. For this reason the sum of the weekly shipments in December will not truly represent the total shipments of the month. The sum of these weekly shipments were 231,372 tons. The total December shipments were 259,326 tons in 1881; 244,790 in 1880, and 179,154 tons in 1879. It is probable that, counting all shipments actually leaving Chicago during the month, they were as large last December as in any other, and perhaps larger.

For the week ending Jan. 6, the shipments billed at Chicago (not including those billed at points west and passing through Chicago) were 58,729 tons this year, against 45,036 tons in the corresponding week of last year and 63,699 tons in the previous week. It is reported that besides these shipments the Nickel-Plate road carried about 6,000 tons from Chicago, being grain from elevators and loaded cars taken from Western connections, as it has no freight houses in Chicago as yet.

Compared with last year, there was a decrease of 9 per cent. in the shipments of provisions, but an increase of 31 per cent. in grain and of 84 per cent. in flour shipments, and flour and grain together made 80 per cent. of the total shipments.

AN ELEVATED RAILROAD IN CHICAGO s proposed by a company which has been asking for an ordinance from the Common Council granting the right of way through the streets and has offered to use electricity as its motive power. There is perhaps not much chance of its getting authority to build, but if so the example of New York ought to make the Council insist on certain restrictions in the public interest which seem never to have been thought of in New York. The use of steam as motive power is perhaps the least of the objections to an elevated road. But the New York roads were permitted to do some things which were not at all necessary, and are of considerable public injury. There was, for instance, no reason why they should have been permitted to make their staircases and the whole of their stations in the street, the staircases sometimes occupying half the sidewalk, They could have bought ground abutting on the street and made their staircases there, and had their waiting rooms not over the street, but in the building, and at no serious expense. That they should have been permitted greatly to depreciate some of the property fronting on the streets through which they run without making any compensation was a great injustice; though the late decision of the Court of Appeals makes it probable that they may still have to pay damages. There should have been some limitation of the number of tracks they might build in a street, and of the extent to which they might store cars on tracks over the streets; a considerable part of Church street in New York is pretty nearly roofed over, and long rows of cars and engines are kept on sidings and recently were even painted and repaired there, saving shop room.

It is not at all clear that an elevated railroad would pay in Chicago. A long, narrow, densely peopled city like New York is best calculated to give one the heavy traffic necessary to support it. But in Chicago it is not necessary to put such a road, if one is to be built, through the streets at all. The lots are usually deep there, and in few cases is the rear built upon. The right of way through the middle of the blocks, over the rear lines of the lots, would not cost a vast sum in Chicago, if only the actual damage had to be paid for, and then the bridges over the streets would be the chief objection to the road. And very likely a sunken road would be better than an elevated road in such a position, as it would not obstruct the streets at all, and ought not to be very costly. But Chicago covers too much ground to be served by any one, two or three lines, and the traffic of any one line would not be very great, compared with that of the Sixth avenue and the Third avenue roads in New York. Such an enterprise could be made very profitable there, perhaps, if the company building the road should also own a large amount of land near its line towards the outskirts of the city. The road might increase the value of land by many millions, while not earning interest on its cost.

With regard to the probable profitableness of an elevated railroad in other cities than New York, it seems to us significant that the capitalists who built the New York elevated railroads and who made millions by it have never, we believe, proposed to build one elsewhere. They had all the experience and abundant capital, and no one will accuse them of not caring to make more money. It is therefore reasonable to suppose that they did not believe that an elevated railroad would be a very profitable enterprise in Boston, Philadelphia or Chicago.

THE NEW YORK, CHICAGO & ST. LOUIS RAILWAY, which has been saddled, apparently beyond hope of relief, with the unfortunate designation the "Nickel-Plate road," as if it were a pretence and not solid and genuine, went openly into the family of the Vanderbilt roads last week, by the election of a new board of directors. This line, which was advertised to be opened on the middle of October last, is not yet fully in operation, actually having no station and no permanent entrance in the city of Chicago; but at this time, when traffic presses, it takes what we may call the "overflow" of the Chicago shipments. Once in the city fairly and its connections established, it will be able to carry, doubtless, all the traffic it can get. There can be no doubt that it will be worth more to the Vanderbilt interest than it could be to any one else, and that it is better for all the other roads east of Chicago that is controlled as it is. Nevertheless, it is a somewhat delicate problem to know what to do with it. It would perhaps be better for all concerned if it had never been born; but there it is, and it is not going away, but must have some traffic to support it.

It has been said that one of the objects of the purchase by the present holders was to prevent the use of the road by rival interests, as the Erie, the Lackawanna and the West Shore roads. We have some reason to think, however, that the policy of the road will be just the contrary—that it will not be exclusively the connection of the New York Central, but will have very little interchange of traffic with the Central and will be open to every other road that wishes to send its cars over it on the sole condition of receiving its mileage proportion of the *regular rates.* If this really is to be the policy of the road, it may exercise a good effect on all through traffic. It has become evident that no important trunk line with traffic to exchange can be kept out of any important Western traffic centre. If it cannot make arrangements for an interchange of traffic with existing roads west of Buffalo, it will build one or one will be built for it, and so injure all the roads connecting the trunk lines with the places in question. A very short time ago it seemed possible that the Erie might be cut off from all the important Western traffic centres; now without expending any capital it has absolute control of lines to Cincinnati and to Chicago, one of which was built for it. The Lackawanna is at Buffalo and wants more connections than the Grand Trunk road can give it. One of these days the West Shore road will be there too, looking for connections. It is better for the Lake Shore and for every other road that these roads should make connections with some of the existing lines, to save them from the probable establishment of a new rival. If they can have full use of a completed road like the New York, Chicago & St. Louis, on equitable terms, the chief motive for building a new one will be removed; and besides avoiding this, there will be much greater probability of maintaining rates, for the Western road can insist on receiving its proportion of the regular rate.

NEW ORLEANS GRAIN EXPORTS have suddenly revived and assumed important proportions. During the first half of 1882 these exports were insignificant, amounting to only 672,012 bushels. But after harvest they revived for some months, and in the 14 weeks from July 23 to Oct. 28 the exports from that point were 3,650,986 bushels, or an average of 260,785 bushels per week. They then fell off suddenly, and for the next seven weeks, ending Dec. 16, were but 347,558 bushels (49,651 bushels per week). In the last two weeks of the year they were 678,602 bushels, nearly twice as much as in the entire seven weeks previous, and more than in the whole of the first half of the year.

We might expect that exports of corn would begin earlier from New Orleans than from other ports, and that they would be large this winter; but so far the New Orleans exports have been almost exclusively wheat.

Apparently New Orleans this season has been getting its grain by rail and not by river. The river shipments revived, like the exports, after harvest. During the first 28 weeks of the year they were but 2,804,717 bushels (100,169 per week); but in the eleven weeks from the middle of July till the end of September they were 3,029,077 bushels (275,371 per week); in the 13 weeks from September to the end of the year they were 1,517,889 bushels (116,761 per week). The shipment do not all go to New Orleans by any means, as the towns and to some extent the plantations on the river get their chief supplies in this way.

Now while the river shipments in the last half of the year were 4,560,530 bushels, the New Orleans exports alone for the same time were 4,677,146 bushels, and the total New Orleans receipts were 7,375,345 bushels. Even if all the river shipments had gone to New Orleans, they would have made but 62 per cent. of its receipts.

There having been unusually large and good crops of grain in the South this year, it is probable that New Orleans has received considerable grain grown south of the Ohio River, which, whether shipped by rail or from river landings, would not appear among the shipments down the Mississippi which we get reports of.

BRITISH RAIL EXPORTS TO THE UNITED STATES were only 4,636 tons last November, which is less than in any previous month since August, 1879, when the demand for foreign rails first began to be active after the depression following 1873. The November receipts, indeed, were but one-fifth of the receipts of the previous month, which, however, were unusually large for this year. Last year in November, and also in 1880, we took more than three times as many rails from Great Britain, and even in 1879 twice as many. But the fall in the price of rails here sufficiently accounts for the decrease in exports. Steel rails in England cost about $25, and with a duty of $28 it is not plain how rails could have been imported at all since early in the year. Now, with the price at American mills not more than $40, doubtless no foreign rails will be brought in except such as were contracted for some months ago. No iron rails were exported to this country in November, none were in June, and in the five months since June the iron rail exports were but 560 tons this year, against 27,887 in the corresponding five months last year, and 20,567 in the first five months of this year.

For the eleven months ending with November the rail exports to this country were 188,269 tons, against 274,923 tons in 1881, 204,872 in 1880, and 37,690 tons in 1879. It was not till August of 1879 that we began to export to any extent, more than three quarters of the total exports to this country in 1879 having been shipped after July. Since that time our rail imports have been considerable, but still only a small proportion of our total rail consumption—not more than 10 per cent. this year, probably, and last year, when they were largest, perhaps 15 per cent. As the consumption was probably 300,000 tons more this year than last, and the imports (even should there be no decrease in December) were about 87,000 tons less than last year, there must have been a great increase in the production of the American rail mills.

THE SOUTHWESTERN LUMBER TRAFFIC, which we referred to recently as one on which it was exceptionally difficult to maintain rates, because the competition of the carriers is complicated with the competition of the shippers from different markets, has been the subject of negotiations again, and after arbitration it has been decided to maintain certain differences in the rates from Chicago, Eau Claire, and the various shipping points on the Mississippi. There was an

attempt to divide the business, but it is not easy to see how this can be done. The St. Paul & Omaha and the Milwaukee & St. Paul could hardly agree that only a certain proportion of the lumber should be taken from Eau Claire; but they must carry all that is offered them there. They could, of course, divide the shipments thence between them; but this, we imagine, would not be much help in maintaining rates. By the new agreement the rate on lumber to Missouri River points is based on the Chicago rate. From Eau Claire it is to be 2 cents higher per 100 lbs.; from Clinton 3 cents lower, from Rock Island 4 cents, from Burlington 5 cents, from Hannibal 6 cents, and from St. Louis 7 cents lower. This, we believe, is the first time that Eau Claire has been included among the places at which fixed differences were established. The rate now established, which went into effect Jan. 1, is 18½ cents from Chicago. For some time rates have not been much more than half of that, and very irregular, and the Western yards have been so fully stocked that only small shipments can be expected for some time. But, for that matter, shipments are usually light in winter.

AMERICAN RAIL PRODUCTION IN 1882 is estimated by Mr. James M. Swank, Secretary of the American Iron and Steel Association, to have been about 1,750,000 tons of 2,240 lbs. The production of steel rails he gives as about 1,500,000, against 1,210,285 tons in 1881, and of iron rails 250,000 tons, against 436,233 in 1881. In the latter part of the year scarcely any iron rails were rolled, the prices accepted for steel being probably less than the cost of manufacturing iron rails.

The imports of rails during the year were probably just about 200,000 tons, so that we have a total of 1,950,000 tons provided for a year's consumption. This is about 10,000 tons more than last year, whereas we constructed at least 2,000 miles more of new road, which would require probably 200,000 tons of rails. But the consumption for second tracks, sidings and renewals this year was very likely less than in 1881. Though there was a great deal more road to maintain a very large proportion of it was new, and most roads had been put into condition to carry more traffic than they could get to carry last year. The great increase in the capacity of the Bessemer works made in 1881 seems to have resulted in an increase of nearly 25 per cent. in their production, which was enough to lay 17,945 miles of track with 56-lbs. rails. This, by the way, can no longer be regarded as the standard American weight. Most of the old roads with heavy traffic use heavier rails for renewals, at least on their main lines, and several of the new roads also.

THE CONTROL OF THE NEW YORK, LAKE ERIE & WESTERN COMPANY, by the terms of the reorganization, was taken from the stockholders temporarily by an arrangement which provided that five "voting trustees" in London should exercise the power to vote on half the entire capital stock until 6 per cent. had been paid on the preferred stock for three successive years. The *Commercial and Financial Chronicle* calls attention to the fact that if the dividend is paid for 1880, in accordance with the recent decision of the United States Circuit Court, the third dividend will have been paid and the stockholders will be able to vote on the whole of their stock, and the occupation of the voting trustees will be gone. These trustees were the representatives of the bondholders, and it was altogether appropriate that the bondholders should control the road so long as it appeared that they only had an immediate substantial interest in its profits. The danger now is that the common stock may be used to control the company to suit speculative or individual purposes, as it receives no dividends, and probably is not held permanently to a great extent anywhere. It will take about $780,000 to pay 1 per cent. on this stock, and it is reasonable to hope for a small dividend. But the great amount of this stock makes it hard to get control of the property without spending a great deal of money. Besides the $85,000,000 of stock there are nearly $57,000,000 of the company's bonds that have the privilege of voting.

OCEAN RATES have continued high for the few weeks since we noticed them last, never below 6½d. for grain by steam from New York to Liverpool, we believe, and ranging from that to 7½d., which was obtained last Monday. For flour the quotations now is 2s. 9d. per barrel—equal to 7⅛d. a bushel on the wheat of which it made. The rates on flour vary much less than those on grain: when the grain rate was 4d. the flour rate was nearly as high as at present. Grain is taken to fill out miscellaneous cargoes, and if there is more room than grain offering, it will be taken at a small fraction of the average cargo rate—sometimes even for nothing, if ballast must be taken unless grain can be had. But flour cannot be so used, and it takes room available for cotton, provisions or other cargo.

The recent high rates have been due more to scarcity of tonnage than to amount exported. Exports have often been larger (especially of grain), but they were very small last year until near its end, and are now so much larger that the supply of vessels, which seems to have been based on the exports two or three months ago, is not sufficient. The present rates will be likely to attract plenty of vessels, however. The rates now tend to discourage grain exports, and at a time when we ought to begin to ship corn quite freely.

THE RELATIVE VALUE OF COKE AND COAL has been the subject of some experiments recently, made by Mr. J. E. Wootten, General Manager of the Philadelphia & Reading Railroad, one of which has heretofore been described in these columns. It was intended to determine by them the relative steam-generating value of Connellsville bituminous coal and coke. Coal, Mr. Wootten says, loses 30 per cent. in weight in the process of coking, that is, 100 lbs. of coal will make only 70 lbs. of coke. He found that in a locomotive with trains of 133 and 137 four-wheeled coal cars, 1 lb. of coke evaporated 7.11 lbs. of water, and that 1 lb. of coal evaporated 8.23 lbs. of water. In other words, 1 lb. of coal evaporated 15¾ per cent. more water than 1 lb. of coke. The coke, 0.7 lb., made from a pound of coal, would evaporate 0.7 × 7.11 = 4.977 lbs. of water; so that the relative value of the coal and the coke made from it are as 8.23 to 4.977, or, in other words, the raw coal will evaporate 65 per cent. more water that it will if converted into coke. The relative values of the volatile matter, which is expelled in the process of coking, and of the solid carbon in the coal are as follows:

Volatile matter	3.253 =	39.5 per cent.
Solid carbon or coke	4.977 =	60.5 " "
Total	8.230 =	100.5 per cent.

THE CHICAGO & ALTON RAILROAD passed through the year 1882 very creditably, though for more than one half of the year its traffic in farm products was materially reduced by the light crops of 1881. In spite of this it shows an increase of about 8 per cent. in freight and of nearly 18 per cent. in passenger earnings, and of $653,757 (8⅜ per cent.) in total earnings. Of this increase $475,131 was made in the last half of the year, when the road was profiting by last summer's good crops. If expenses have not increased more in proportion than earnings, this will give an increase of $359,566 in net earnings, or $2.64 per share of stock previous to the recent issue to retire bonds. And this gain, it must be remembered, was made over what was with one exception the most profitable year in the history of the company. The surplus over the 8 per cent. dividend will doubtless go into improvements of the road.

THE WEST-BOUND FREIGHT MOVEMENT continues fair, judging by the shipments from New York; though much less than in 1881 in December, rates being about twice as high, the shipments were as large as in 1880, which was a very good year as a whole. The Lackawanna road has been taking some freight, but it seems to be more at the expense of the lines outside of the trunk line combination (chiefly the New London route and the Chesapeake & Ohio, which maintain agreed differences in rates) than of the trunk lines; at least it is the outside lines that complain. The Lackawanna will be better able to handle business with dispatch soon. At present its only connection is with the Grand Trunk. It will soon probably interchange traffic with the New York, Chicago & St. Louis also, and when it is fairly at work we may expect it to have a regular share of the traffic in the pool. It is unquestionably a trunk line, though with nearly all its through traffic to be developed yet.

The St. Paul Passenger Agreement.

The following document has been issued, dated Dec. 23:

The following is agreed to by the passenger representatives of lines in interest as a fair interpretation of the intent and meaning of the general managers' agreements, relative to the conduct of the passenger business within the territory specified in the Northwestern Traffic Agreement, the same to apply on passenger business both east and westbound, and to continue in force for one year from Jan. 1, 1883:

First.—All passenger rates having been restored, there shall be no change in the current passenger traffic, unless by agreement of all lines interested. The current passenger traffic rates between Chicago, Englewood, Washington Heights and Blue Island, and St. Paul and Minneapolis, are specified to be as follows:

First class, unlimited	$14.00
First class, limited	12.50
Second class and emigrant	9.00
Between Milwaukee and St. Paul.	
First class, unlimited	$11.35
First class, limited	10.50
Second class and emigrant	8.00
Between Milwaukee and Minneapolis.	
First class, unlimited	$11.60
First class, limited	10.50
Second class and emigrant	8.00

these rates to be strictly maintained by our respective companies, and we shall demand the same from connecting lines, with the exception that on seaboard emigrant business the rates *via* the lake and Milwaukee shall be the same as *via* Chicago.

Second.—On "iron-clad" round-trip land tickets the proportion between Chicago, Englewood, Washington Heights and Blue Island and St. Paul or Minneapolis shall be $16 40; between Milwaukee and St. Paul and Minneapolis, $14.40; and these rates shall be used only as *basing* rates for regular land points, as specified on Chicago and Milwaukee joint rate sheets.

Third.—On business from the south and southeast to St. Paul or Minneapolis and beyond, and *vice versa*, where the through rate is not made *via* Chicago, the lines between Chicago & St. Paul or Minneapolis may accept a proper *pro rata* proportion of the through rate as made *via* the shorter route.

Fourth.—No reduction from current passenger tariff rates shall be made for "laborers."

Fifth.—No theatrical rates between Chicago, Englewood, Washington Heights and Blue Island, and St. Paul or Minneapolis, shall be made for less than four persons holding a theatrical certificate, or permit, entitling them to the usual reduction of 33⅓ per cent. from current passenger tariff rates. The further details concerning the matter, to be agreed upon by the general passenger agents.

Sixth.—Summer excursion rates shall be agreed upon at a meeting to be called prior to Jan. 31, 1883, at which meeting all parties interested shall be present.

Seventh.—The Chicago, Rock Island & Pacific and Minneapolis & St. Louis Railways shall be permitted to sell freight shippers—through their freight departments only—a special one-way or round-trip commercial ticket between Chicago and St. Paul or Minneapolis, at a rate which shall equalize the present rate of $20 for 1000-mile tickets, as now sold by the Chicago & Northwestern and Chicago, Milwaukee & St. Paul railways, it being understood and agreed by the Chicago, Rock Island & Pacific Railway and Minneapolis & St. Louis Railway, that the restrictions placed upon the issue, sale and use of such commercial tickets for shippers, shall agree and be in accordance with the restrictions placed upon the sale and use of 1,000-mile commercial tickets referred to.

It is further agreed that any commercial mileage or single or round-trip commercial tickets issued by the Chicago & North-western; Chicago, Milwaukee & St. Paul; Chicago, Rock Island & Pacific; Chicago, St. Paul, Minneapolis & Omaha or Minneapolis & St. Louis railway companies sold after Oct. 1, 1882, and found in the hands of ticket-brokers or any unauthorized persons to whom the same have been transferred illegitimately, they shall be redeemed by the company issuing the same at double the value at which it has been agreed they should be sold, and if any similar tickets issued and sold prior to Oct. 1, 1882, are so found, they shall be redeemed by the company issuing the same at $25 each.

Eighth.—No "special rates" to cover any cases not specified in this agreement between Chicago, Englewood, Washington Heights, Blue Island and Milwaukee and St. Paul or Minneapolis, shall be made without agreement of all lines in interest.

Ninth.—No passes or tickets of any kind shall be given free or furnished at any price so as to cut or reduce passenger rates between the points covered by this agreement, except as may be provided for in the theatrical agreement.

Tenth.—No "side cut" stipend or gratuity other than the agreed per capita ticket commissions shall be given or paid to any ticket agent or ticket clerk, or to any other person for the benefit of any ticket agent or ticket clerk.

Eleventh.—No tickets or ticket orders shall be issued and placed in the hands of any agents of any other railroad or transportation company, or other persons, east of Chicago, at St. Paul, Minneapolis, or north, northwest or northeast of St. Paul or Minneapolis.

Twelfth.—No excursion or round-trip tickets shall be issued or accepted from other lines, by any of the lines parties to this agreement reading by one route going and another route returning, but such tickets shall be issued both going and returning by one route only.

Thirteenth.—No line shall pay for transferring unticketed passengers from hotel or residence to depot.

Fourteenth.—No time limit shall, except for legitimate reasons, be extended on any class of tickets; and second or third class tickets shall not be made good for first-class accommodations in sleeping or chair cars, whether the tickets are issued by the parties to this agreement, or by other roads.

Fifteenth.—No stop-over privileges shall be given on one way limited tickets of any class.

Sixteenth.—The maximum per capita ticket commission shall be as follows, to commence Jan. 1, 1883:

Between Chicago or Milwaukee and St. Paul or Minneapolis.

First class	$2 00
Second class or emigrant	1 50
First class (round trip)	3 00

Seventeenth.—It is understand and agreed that any changes or additions to be made hereafter in the details of this agreement, so that there may be no misunderstandings arise, shall be agreed upon by the parties interested, and shall be approved by the general managers, and this agreement shall also be approved by the general managers.

Eighteenth.—A violation of this agreement shall subject the offending party to the penalty of paying the sum of $500 for each offense, to the remaining roads parties hereto, in equal proportions, and all questions regarding the violations of this agreement shall be submitted to the general passenger agents of the lines parties hereto, the majority of whom shall impose the penalty, if in their judgment they deem it necessary, after fully investigating all the facts in the case. In case there should be a tie vote on the question of a violation of this agreement, it is agreed that the matter shall be submitted to and decided by some one other general passenger agent, who shall be a disinterested party, the same to be selected by a majority vote of the general passenger agents of the lines parties hereto.

CHICAGO, MILWAUKEE & ST. PAUL RY.
(*signed*) A. V. H. Carpenter,
General Ticket & Passenger Agent.
(*approved*) S. S. Merrill,
General Manager,
CHICAGO & NORTH-WESTERN RY.
(*signed*) W. H. Stennett, General Passenger Agent.
W. A. Thrall, General Ticket Agent.
(*approved*) Marvin Hewitt,
2d Vice-President and General Manager.
CHICAGO, ROCK ISLAND & PACIFIC RY.
(*signed*) E. St. John,
General Ticket and Passenger Agent
(*approved*) R. R. Cable,
Vice-President and General Manager.
CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA RY.
(*signed*) T. W. Teasdale, General Passenger Agent.
(*approved*) J. H. Hiland, General Traffic Manager.
CHICAGO, BURLINGTON & QUINCY R. R.
(*signed*) P. Lowell, General Passenger Agent.
(*approved*) T. J. Potter, 3d Vice-President.
MINNEAPOLIS & ST. LOUIS RY.
(*signed*) S. F. Boyd,
General Ticket and Passenger Agent.
(*approved*) R. R. Cable, President.

Instructions for Working the Westinghouse Air-Brake.

The Superintendent of Air Brake Equipment on the New York Central & Hudson River Railroad, Mr. A. H. Catlin, has issued the following "instructions for the use and care of the automatic air-brake:"

The attention of air-brake inspectors and engineers is called to the following rules:

1. In making up trains, all the couplings must be united so that the brakes will apply throughout the entire train. The cocks in the brake pipe must all be opened (handles pointing down), except that on the rear of the last car, which must be horizontal, and the hose on the rear end of last car hooked up.

2. In detaching engines or cars the couplings must invariably be parted by hand, when practicable to do so; the cocks in the brake pipes must always be closed befor separating the couplings, to prevent application of the brakes. At stations where it may be necessary to cut the train to take on or leave cars, trainmen must not turn the stop-cocks or disconnect the hose until the brake has been released by engineer.

3. If the brakes are applied when the engine is not attached to the train or cars, they can be released by opening the cock in the end of the small cylinder or the one under the auxiliary reservoir.

4. The adjustment of the brakes should be such that, when applied, the pistons in the brake cylinders will not travel to exceed eight or nine inches. This will allow room for

wear of shoes, stretching of rods, springing of brake beams, etc., while on the road.

5. Great care must be exercised, in taking up the slack in connections, to have the levers and pistons pushed back to their proper places, and the slack taken up by the under connections or dead lever.

6. The brake cylinders and triple-valve must always be kept clean and free from gum, so that they will readily release when the air has been discharged, and oiled once a month; mark the last date of oiling on the cylinder with chalk.

7. For the automatic brake, the handle of the four-way cock must be turned horizontally. If turned down will change it to the simple air-brake; if turned midway between these two positions it will close communication with the brake cylinder and reservoir, and should be so turned when desirable to have the brakes out of use on any particular car, from breaking of rods, etc.

8 In starting the pump, engineers must allow the condensed steam time to escape gradually, and not endeavor to force it out by undue pressure of steam.

9. Engineers will regulate the quantity of air to be applied to the brakes by the speed of the train, and must not use the full pressure except in cases of emergency; they must apply the pressure gradually to avoid discomfort to passengers or damage to the apparatus. The brakes should be thrown off just as the train is coming to rest.

10. Engineers must know, before leaving the round-house, that their engine-valve and pump are in perfect working order, and must report promptly any defect, that it may be repaired at once.

Inspection.

11. After engine is coupled to train, and all connections are made, the engineer will charge the auxiliary reservoirs under the cars by pushing the handle of valve to the extreme left. After train is charged he will bring the handle to the right, just over the running notch, but not far enough to allow air to escape from the train line; leaving it in this position for a few moments, and noting any leakage, which will be indicated by a gradual falling off in pressure, as shown by the air gauge. After this apply brakes gradually and allow them to remain on long enough for inspector to see that they apply throughout the entire train. Seventy (70) pounds is the maximum pressure allowed on train line and auxiliary reservoirs, and must never be exceeded. Better braking can be done with less pressure when rails are slippery.

12. The inspector must take his position at the engine while train is being tested, that the engineer may inform him if any leak be discovered, which must be promptly attended to. He will then examine each car throughout the entire train to see that the brakes have applied properly, and if all is right, will signal the engineer, who will release them.

13. In damp weather the triple valve should be drained daily, to let out any water that may have collected. Slack the bottom nut about half a turn, let the water escape, and screw it up again.

14. The valve for the application of the brakes from the inside of the car should be kept tight, and must be examined always by the inspectors when the car is standing at terminal stations.

15. When brakes do not release readily on one or two cars, but promptly on balance of train, an unequal pressure is evident; in such cases "bleed" the auxiliary reservoirs of the cars with over-pressure until brakes commence to release, thereby saving time of equalizing by pumping from engine.

16. No excuse will be received for trains leaving stations, where inspectors are employed, without the air brakes being in perfect order.

17. When trains start from points at which no car inspectors are located, the conductor of the train must see that the test is made in accordance with these rules.

Lubricants to be Used.

18. For lubricating steam pumps and reversing heads, use valve oil.

19. For air pumps and brake cylinders, use the best earth oil.

20. Engineers must keep a supply of above on hand for use as required.

21. The oil cups on reversing cylinders and steam supply pipes feed automatically, and, if properly adjusted, will require filling but once for a run of five (5) hours. Care must be taken before filling the cup to let out the condensed steam by opening the small cock at the bottom of the cup.

Supplies to be Kept on Hand.

22. Engineers must always have on hand an extra coupling.

23. Inspectors at all points must keep on hand, ready for immediate use, a supply of all parts that are liable to get out of repair, as well as tools necessary for making repairs.

In carrying out Rule 12, the inspector *must* take his position *on* the *engine*, where he can *see* the air gauge.

When any defect is found in the brake on a car which would cause too much detention to train to repair, and necessitates cutting out the brake on that car, information of it must be telegraphed me at once.

Inspectors must also notify the conductor and engineer running the train of such defect.

Engineers will report promptly any neglect to make the inspection in strict compliance with the above rules.

Why the Canada Southern Builds a New Bridge over the Niagara.

The Buffalo *Express* gives the following account of the tolls paid by the different roads for the use of the bridge at Buffalo, which shows why the Canada Southern finds it economical to build a bridge of its own:

The present enormous Canada Southern traffic over the International Bridge, and the announced intention of that company to bridge Niagara for itself, as lately detailed in *The Express*, give especial interest at this time to the relative amount of traffic by the different roads using the International and Suspension bridges. When the International Bridge was opened for traffic, Nov. 3, 1873, a fixed schedule of tolls was put into effect as follows: For each passenger in a passenger car crossing the bridge, 10 cents; for each loaded freight car, $1; for each empty, 50 cents; each new locomotive was charged $7.50; each new (unused) passenger car $2.50; each new freight, $1.50, and each conductors' van, $1. The Grand Trunk, Great Western, and Canada Southern paid tolls to the International Bridge Company (practically the Grand Trunk) on this basis for several years; but the Canada Southern traffic became so great that it found the bridge tolls very burdensome and refused to pay the full rate. Since Oct. 31, 1877, the Bridge Company and the Canada Southern have been unable to agree as to tolls. In 1878 it was voted that the Southern should guarantee the Bridge Company a minimum of $55,000 yearly, and was to receive, on all traffic over that, 33 per cent. reduction of the fixed rates up to $140,000. The Southern appealed to the courts, and the matter was argued at length before Judge Wallace in the United States District Court. The matter is still pending in the courts.

To give some idea of the burden the bridge tolls have been to the Canada Southern, we append the following table of earnings by the Bridge Company for the first six years of its operation. The following are the tolls paid by the roads named, from July 1, 1874, to June 30, 1880:

Year.	Grand Trunk.	Great Western.	Canada South'n.
1875	$66,454 40	$30,261 79	$56,619 57
1876	59,281 65	56,057 57	55,906 59
1877	57,454 00	55,000 00	54,999 88
1878	63,230 50	54,647 52	116,442 25
1879	53,406 12	55,000 00	83,989 82
1880	51,337 75	55,000 00	75,000 00
Total	$351,164 42	$305,966 88	$442,958 11
Average	58,527 40½	50,794 48	73,826 35

Last year the Canada Southern tolls were $76,450, and the Great Western $65,656. The local traffic will average about $1,200 a year. Since the consolidation of the Grand Trunk and Great Western the latter's tolls have probably fallen off some, since more of its traffic is by the Suspension Bridge. The claim is made by the International Bridge Company that the tolls have to yield an amount which, after deducting at least $50,000 annually for a reserve fund, and $50,000 annually for working expenses, will be an adequate return on $2,000,000 of outlay—about the cost of the bridge. With total toll receipts say at $200,000—they will not be far from that this year—there would be, after this deduction of $100,000, an earned interest of 5 per cent. on the cost of the bridge. Even with the anticipated withdrawal of the Canada Southern traffic from the International Bridge—and just now it is not far from half the total traffic over the bridge—it does not seem likely that the revenues will be so far reduced as to be seriously affected. Although fewer lines will use the bridge, an increase in their traffic is to be expected which promises to grow into big figures. Already the Lackawanna is giving the Canada lines heavy shipments of coal. Within another year the West Shore will be open for traffic. Though not a coal road, its west-bound freights are sure to be considerable. Two contradictory reports have been circulated respecting its future alliances. Should it work with the Grand Trunk system, its freightage will of course go over the International Bridge. But there are many things which indicate great friendliness between this road and the Central. The two roads are apparently on the best of terms. In this city they have amicably exchanged lands for yards: the Central gives up its claim to the old Conhocton grade at the request of the new-comer. No opposition to the West Shore is reported to have been made anywhere by the Central, although the West Shore crosses it here and there. The West Shore contemplates a line to the International Bridge; but the statement is made that its chief connection will be with the new bridge which the Canada Southern declares its intention to build. The Rochester & Pittsburgh and the Lehigh may also be expected to contribute their quota to the future traffic of the International Bridge.

As for the new bridge, there are already charters, granted in years past to companies representing the Vanderbilt interests, giving Congressional sanction to the plan of again bridging Niagara. The Dominion solicitors for the Canada Southern, Messrs. Crook, Kingsmill & Catanach, have lately given notice of their intention to apply in the Dominion Parliament this winter for an act incorporating a company to construct a bridge across the Niagara River from a point on the Canadian side, either between the Falls and the present railway bridge, or below that bridge, to a point on the New York side of the river for the passage of railway traffic. Such company is to have power to fix the tolls, subject to certain restrictions, but not to exceed those of the International Bridge Company under their published tariff of Nov. 3, 1875. The extent of the privilege asked is that the company may have powers of management, collecting tolls, controlling the subscription of stock, amalgamation with other companies of a like nature in this state, as is usual, and such other necessary powers as it is customary to delegate in such cases. When the International Bridge was built concurrent charters were granted by Canada and New York state to build it. Those charters were consolidated into one corporation under due authority from the legislative bodies of Canada and New York. The assent of Congress, as having ultimate authority over half the river, was also procured. It is stated that Clarke, Reeves & Co., the Phœnixville Bridge Company, have already been furnished specifications for a double track suspension bridge. From this it will be seen that the new bridge will necessarily be a larger structure than either of the bridges which now span Niagara River below the Falls.

THE SCRAP HEAP.

Locomotive Building.

The Brooks Locomotive Works, in Dunkirk, N. Y., last year built 203 locomotives, the largest number ever turned out from these works in one year. In 1872 there were 72 turned out, but the number fell to 6 in 1874, and remained small until 1880, when 100 were built, followed by 146 in 1881. The average number of men employed last year was 1,172, some of them, however, being at work on extensions of the shops. The amount paid out for labor in 1882 was $600,694, an average of $2,890 per engine.

Car Notes.

The Missouri Car & Foundry Co. has nearly completed its new buildings in St. Louis to replace those recently destroyed by fire.

The Laconia Car Co., in Laconia, N. H., is building 50 hay cars for the Boston, Concord & Montreal road.

It is said that the Pennsylvania Company will build new and very extensive car shops at Ft. Wayne, Ind., where all new work will be done for its roads.

The new works of the Baltimore Car Wheel Co. are progressing well. When completed they will have a capacity of about 400 wheels a day.

The car works at Youngstown, O., have orders enough on hand to keep them busy for some time.

The Georgia Car Co., at Cartersville, Ga., has a contract for building 10 Tiffany refrigerator cars for the fruit business from Georgia and Florida. The cars will be completed next month, and a company is already organized in Atlanta for the purpose of running Tiffany cars.

The Michigan Car Co. in Detroit has lately built 200 Tiffany refrigerator cars for the Grand Trunk, and during the past summer the Chicago, Milwaukee & St. Paul has built 100 Tiffany cars, the Union Pacific 25, the Burlington, Cedar Rapids & Northern 15, and the Chicago & Northwestern 15.

Bridge Notes.

The Hawkins Bridge Works in Springfield, Mass., have lately completed 20 bridges for the Pemigewasset Valley road.

The Morse Bridge Co. in Youngstown, O., has orders for bridge and roof work enough to keep the shops busy for several months to come.

The Keystone Bridge Co. in Pittsburgh is building an iron bridge over Cattaraugus Creek near Springville, N. Y., for the Rochester & Pittsburgh road.

Iron Notes.

The new furnace of the Kirkland Iron Co. in Kirkland, N. Y., is 65 ft. high and 13 ft. bosh, and is expected to make from 110 to 120 tons of pig iron per day. The furnace has all the latest improvements, and there are three hot-blast ovens, one of a new pattern. The blast engine has a steam cylinder 36 by 72 in., and a blast cylinder 75 by 72 in. Mr. Irvin A. Williams, of Utica, N. Y., is Manager of the company.

The Terre Haute Iron & Nail Co. at Terre Haute, Ind., is enlarging its works and increasing their capacity.

The Oliver Wire Co., in Pittsburgh, has started up its new mill. The old one was burned down last November.

The Eastern Pig Iron Association was formed at a meeting held in New York, Jan. 5; it will be composed of the owners of furnaces east of the Allegheny Mountains. The details of the organization were referred to a committee to report at an adjourned meeting.

The Ohio Falls Iron Works in New Albany, Ind., are closed for repairs, but will start up Jan. 15.

The new works of the American Wire Co. in Cleveland, O., are nearly completed.

The Cleveland Rolling Mill Co., in Cleveland, O., has taken a contract for 4,550 tons of fish-plates for one road.

Manufacturing Notes.

The Springfield Glue and Emery Wheel Co. in Springfield, Mass., recently filed a petition in insolvency, and called a meeting of its creditors to consider the best course to be pursued.

The St. Louis Vise & Tool Co. has completed a new machine shop, 45 by 125 ft., in St. Louis, in place of the shop lately burned down.

The Lane & Woodworth Glass Roofing Co. started up its new works last week, and is to run them full time on orders.

The Rail Market.

Steel Rails.—The *Iron Age* says: "The past year has developed a steady decline in prices, the extreme rates having been $58 in January, against $38.50 in December. In February sales were made at $55, and from that down to $47.50 in May, after which the market seemed to become steadier, and there was very little change until September, when $45 was reached. During the last three months of the year prices continued weak, and sales were made at gradually declining figures, until $40 was reached in November and $38.50 in December. The influences which led to this condition of affairs are too well known to need comment. The capacity of the mills, all told, is now estimated at about 2,000,000 tons, and it is believed that orders for upward of 700,000 tons have already been entered, with prospects that the requirements of the roads may be double that amount before the close of the year. This still leaves nearly a third of the capacity unemployed, from which it may be predicted, with a good deal of confidence, that prices will rule very low. Orders could be placed to-day for almost any quantity at $40, and in some cases probably a lower rate would be accepted for deliveries at sellers' convenience. Iron rails are now regarded as a thing of the past, and it is not improbable that the demand for steel rails on that account may be larger than was expected."

Rail Fastenings.—Spikes are quiet at $2.90 to $3 per 100 lbs. A heavy contract for fish-plates is reported placed at $38 to $39 per ton, which is a low price.

British Rail Exports.

The exports of iron and steel rails from Great Britain for November and the eleven months ending with November to the United States and to all countries are reported as follows, in tons of 2,240 lbs., by the Board of Trade:

	November.			Eleven months.		
	1880.	1881.	1882.	1880.	1881.	1882.
To United States:						
Iron rails	3,484	4,393	.....	87,212	92,872	21,127
Steel rails	10,702	10,9[illegible]	[illegible]36	117,660	182,051	167,142
Total	15 586	15,3[illegible]4	4,636	204,872	274,923	188,269
To all countries:						
Iron rails	10,427	6,659	2,014	120,995	115,265	44,722
Steel rails	34,837	35,152	52,292	443,117	547,522	687,416
Total	45,264	41,811	54,306	570,112	662,787	732,138

The exports to the United States in November this year were not one-third as great as last year or in 1880, and, as in several months this year, there were no exports of iron rails to this country. For the eleven months the total exports to the United States were 31½ per cent. less than last year and 8 per cent. less than in 1880, and this although we built perhaps 2,000 miles more this year than last, and 4,000 more than in 1880. The total exports to this country this year were sufficient for 2,139 miles of track. The total consumption of the country in the eleven months was probably not far from 2,000,000 tons, so that only a tenth of the supply came from Great Britain.

Locomotive Tests.

The Philadelphia *Ledger* of Jan. 8, says: On Saturday afternoon a five-car passenger train was taken out of the Third and Berks streets depot by the Shaw locomotive, with a party of experts, and others interested in testing the speed of the engine on the train. The run was to Bound Brook and return. The fastest time made was on the return from Bound Brook, when an average speed of 61 miles an hour was maintained for about 10 miles, on a level piece of road to Skillman Station. Two spurts each of a 70 mile per hour rate was made, according to the time taken by the Reading Railroad Company's train dispatchers.

Steel Ships.

The use of steel in ship building appears to be steadily growing in favor, alike with the builders and owners. In 1879, according to a statement in the *London Times*, the tonnage of steel-built vessels amounted to only 18,000, in 1880, it rose to 42,000 tons, and in 1881 to 66,609 tons. In 1882 the steel vessels built on the Clyde, numbered 60, with an aggregate tonnage of 108,254 tons.

Taking It Easy.

Mr. Tracy Clark, a stock raiser of Albion, Ill., had the queerest railroad experience on the Louisville & St. Louis Air Line last Saturday night that has yet been recorded. It throws into the shade the old story of the Georgia Railroad on which trains stopped to let the passengers gather wild flowers, and that other story about the train which had a pilot attached to the rear to keep the cows from running over it. Mr. Clark states that he left Albion last Saturday afternoon for Cincinnati with some hogs for market. The hogs were in cars in a freight train containing other consignments. About 9 o'clock in the evening the freight train ran on to a side track about a mile and a half west of Princeton, Ind., and laid up to let two passenger trains pass going in opposite directions. The conductor and brakeman of the freight, reinforced by the engineer, went into the caboose, and while waiting for the trains to pass, fell asleep. So did Mr. Clark, though he was awakened by the passing of one train in half an hour and heard the other pass in about an hour. He was not disturbed again until daylight in the

morning, when the door of the caboose was pushed open and a man out of breath punched the conductor awake and inquired:

"What shall I do with you?"

"Send me on when the other trains pass," replied the conductor.

"The other trains passed hours ago," answered the other "and you are out of time and must wait for orders."

"The h—l you say?" exclaimed the conductor.

It was Sunday morning and the stranger was an employé of the railroad at Princeton sent out on foot to look for the lost train. It had disappeared entirely after leaving the last railroad station. The conductor, engineer and brakeman had slept soundly in the caboose all night and the fireman was snugly asleep in the locomotive cab, while the fire had died out. The whole train list was awakened and the train finally put into Princeton to await orders.

Mr. Clark was due at Cincinnati Monday morning with his hogs and did not arrive there until Tuesday night. He will probably claim damages from the railroad company.—*Louisville Commercial.*

She Knew Her Rights.

On Monday afternoon, just as the gas was being lighted a young man entered the forward ladies' cabin of a Fulton ferry boat, New York. All the seats were occupied except one, and he made his way unsteadily to it. He had evidently been making too many New Year's calls. As the boat started he placed his hat on the seat and went to look at himself in the mirror. In his absence a colored woman with a basket of clothes entered and took the vacated seat. The young man saw her, and rushed to get ahead of her, but was too late.

"That's my seat!" he exclaimed.

"No, sah; dis yar's der ladies' cabbing."

"But I had the seat before, and you are sitting on—"

"Yessar. Yo' wus heah befo', but I is heah behind, and its none o' yer bizness what I's sottin' on."

"Yes, madam, but—"

"Dais no use verlosserpe-lin' ter me. I knows my rights, accordin' ter der fo'teenth commandment. Niggah's good as white, an' der mancerpation proclamation is a womancipation proclemation likewise. Go 'way, or I'll call a ossifer."

He was compelled to wait until the boat reached the slip before he could obtain his tile, and, when he recovered it, it looked like a concertina in repose, and he had to try it on his foot before he could use it.—*New York Sun.*

Hospital Cars.

The Chicago, St. Louis & New Orleans shops at Water Valley, Miss., have lately converted an old passenger car into a hospital car to be used in case of accidents. It is provided with berths, stretchers, etc., and a supply of bandages, with a case of surgical instruments, is kept on board.

It is said that the Pennsylvania Railroad Co. is building some cars of a similar kind.

The Brooklyn Bridge.

At a meeting of the Trustees of the Brooklyn Bridge Jan. 8 the Executive Committee reported that the New York Wire & Rope Co.'s contract for the supply of traction wire ropes was to have been completed by the 15th inst. Certain experiments or tests which had been made with these ropes having failed to fully satisfy the contractors, they have asked for 30 days' extension of time. It was recommended that this extension be granted, upon the understanding that if the contractors failed to fill the contract at the end of that time, it be awarded to the next lowest bidder. The report was adopted. It was recommended that the Legislature be asked to grant the Trustees authority to raise from the two cities the additional sum of $150,000, to be expended in the purchase at the Brooklyn terminus of a strip of land 100 ft. wide and 200 feet in length, running from the middle of Sands street to High street, in order to afford suitable exit from the bridge. The committee report that, owing to a reduction of the sections of shapes to be used on the bridge, an extra expense of $9,708.67 had been incurred, which amount was due to the Edge Moor Iron Co. The bill was ordered paid. A contract for spruce planks for flooring was let at $18 per 1,000 ft.

Governor Butler on Protection of Railroad Employes.

Governor Benj. F. Butler, of Massachusetts, in his inaugural address said:

"There is one matter which I think the managers of every well-regulated railroad will agree with me needs attention—the overworking of railroad employés who have to do with the running of trains, whether on them or as switchmen, gatemen or station-men. Faithfulness, care and activity in all these are imperative for the safety of travelers. On some railroads these men work too many hours, and a number of accidents occur from their inactivity and exhaustion from this cause. I suggest that legislation be had by which no employé connected with the running of trains on any steam railroad should be employed more than ten hours in any one day, with a proper interval for food, except in case of accident or emergency. This would be economy in the management, because, to say nothing of regret for loss of life and limb to the passengers, a single accident would cost the road much more than an amount sufficient to duplicate even, the salaries of such employés for a considerable length of time. To make this law self executing would only require provision that in case injury came from the working of a train where anyone connected with it had been employed more than that number of hours, such fact should be *prima facie* evidence of negligence on the part of the road.

"The number of employés injured and killed during the year calls for legislative action. During the last year 198 were hurt on the roads in this state, of whom 56 were killed. Nor is this an unusual number of such fatalities. A very considerable portion of these accidents happened in the coupling and uncoupling of freight cars. Are not such accidents preventable? If so, preventable accidents become crimes. If railroad managers were as careful of the lives and limbs of their employés as the verdicts of juries have made them of the safety of their passengers, some means of automatic coupling and uncoupling cars would have been adopted. May not legislation require it?"

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Buffalo, New York & Philadelphia, special meeting, at No. 21 Broad street, New York, Feb. 5, at noon, to vote on the agreement of consolidation with the Buffalo, Pittsburgh & Western. The *Olean & Salamanca* stockholders will meet at the same time and place.

Lehigh Valley, annual meeting, at the office, No. 228 South Third street, Philadelphia, Jan. 16, at noon.

Technical Meetings and Conventions.

The *American Institute of Mining Engineers* will hold its annual meeting in Boston, beginning on Tuesday, Feb. 20.

The *American Society of Civil Engineers* will hold its annual meeting in New York, beginning on Wednesday, Jan. 17.

The *Master Car-Builders' Club* will hold its regular monthly meeting at the rooms, No. 113 Liberty street, New York, Thursday evening, Jan. 18. Subject for discussion, "Car Wheels and Gauges—Rail Sections and Track Gauges."

The *Master Mechanics' Association* will holds its annual convention in Chicago, June 19 next.

Dividends.

Dividends have been declared as follows:

Atchison, Topeka & Santa Fe, 1½ per cent., quarterly, payable Feb. 15. Transfer books close Jan. 13.

Central Pacific, 3 per cent., semi-annual, payable Feb. 1. Transfer books close Jan. 15.

Cleveland, Columbus, Cincinnati & Indianapolis, 2 per cent., payable Feb. 1. Transfer books close Jan. 15. This is the first dividend since Feb. 1, 1881, when 5 per cent. was paid.

Middletown, Unionville & Water Gap (leased to New York, Susquehanna & Western), 3 per cent., semi annual, payable Jan. 10.

Oregon & Transcontinental Co., 1½ per cent., quarterly, payable Jan. 10. This is the first dividend

Panama, 6½ per cent., payable Jan. 10. Transfer books closed Dec. 30.

St. Louis & San Francisco, 3½ per cent., semi-annual, on first-preferred stock, payable Feb. 1. Transfer books close Jan. 20.

Terre Haute & Indianapolis, 4 per cent., semi-annual, payable Feb. 1, at the office of the Treasurer in Terre Haute, Ind., or at the office of the Farmers' Loan & Trust Co. in New York.

Foreclosure Sales.

The *Columbus, Chicago & Indiana Central* road was sold in Indianapolis, Ind., Jan. 10, under foreclosure of mortgage, the sale including the entire property, subject to the bonds prior to the general first-mortgage. The road was bought for $13,500,000, the minimum price fixed by the Court, by a committee representing the Pennsylvania Railroad Co., which is now the chief holder of the bonds.

ELECTIONS AND APPOINTMENTS.

Bachman Valley.—At the annual meeting, Jan. 8, the following were chosen: President, A. W. Eichelberger; Directors, P. R. Pine, Jerome L. Boyer, Samuel Thomas, A. K. Boyd, Stephen Keefer, Henry Shirner, Joseph Dellone, J. W. Gitt, Joseph Althoff, Levi Dubbs, Eli Wolfgang, Emanuel Heindel. The road is worked by the Hanover Junction, Hanover & Gettysburg Co.

Baltimore & Philadelphia.—The officers of this new company are: President, James B. Washington, Allegheny, Pa. Directors, Wm. S. Bissell, Thomas M. King, Allegheny, Pa.; H. S. Burgeseer, John M. Cleave, Pittsburgh; John K. Cowen, John W. Davies, Robert Garrett, Baltimore. The company is controlled by the Baltimore & Ohio.

Berlin Branch.—At the annual meeting, Jan. 8, the following were chosed: President, A. W. Eichelberger; Directors, R. M. Wirt, Stephen Keefer, Jacob Resser, A. W. Storm, S. Meisenhelter, George Diehl, Wm. Hilderbran, James Wolf, Wm. Bittinger. The road is leased to the Hanover Junction, Hanover & Gettysburg Co.

Boston, Hoosac Tunnel & Western.—Mr. S. V. White has been chosen Treasurer in place of Estes Howe, resigned.

Boston & Lowell.—The board has re-elected Josiah G. Abbott, President; Charles E. A. Bartlett, Treasurer.

Buffalo, Pittsburgh & Western.—At the annual meeting in Philadelphia, Jan. 8, the following were chosen: President, J. W. Jones, Philadelphia. Directors, Clarence H. Clark, George F. Tyler, E. A. Rollins, B. K. Jamison, Philadelphia; Foster W. Mitchell, Oil City; P. P. Pratt, E. P. Beals, Buffalo, N. Y.; Archer N. Martin, Isaac N. Seligman, Calvin H. Allen, Edward L. Owen, New York.

Central Pacific.—Mr. Timothy Hopkins has been elected Treasurer of this company, vice E. W. Hopkins, resigned.

Central Vermont.—On Jan. 1, 1883, the office of Frank H. Clarke, General Western Passenger Agent of this Company, was moved to 52 Clark street, ShermanHouse Block, Chicago.

Chattanooga Western.—The officers of this new company are: President, J. B. Neely; directors, G. C. Conner, C. E. James, S. R. Reed, C. E. Stanley; Secretary and Treasurer, C. E. James; General Manager, G. C. Conner. Offices in Chattanooga, Tenn.

Chester Creek.—At the annual meeting in Chester, Pa., Jan. 8, the following officers were elected: Samuel L. Felton, President; Directors, Isaac Hinckley, Amos Gartside, Thomas Appleby, Charles Warner, David Woelpper.

Chicago, Burlington & Quincy.—Mr. George C. Smith is appointed Acting Purchasing Agent, in place of G. B. Harris resigned.

Chicago, Rock Island & Pacific.—Mr. Frederick Farrington has been appointed Freight Agent of the Southwestern Division, with office at Leavenworth Kan.

Mr. W. H. Robinson has been appointed Claim Agent to succeed Mr. Farrington.

Columbus, Hocking Valley & Toledo.—M. M. Greene, President, announces that Col. Orland Smith, having been elected Third Vice-President of the Baltimore & Ohio Railroad Co., his resignation as General Manager of the lines of this company, has been tendered and accepted, and that the duties of General Manager will be assumed by the President. Wm. Greene has been appointed Purchasing Agent of the company, and all communications should be addressed to him, instead of to the General Superintendent, as formerly.

Danville & New River.—W. T. Sutherlin, President, is also Superintendent, and G. K. Griggs, Secretary and Treasurer, is also Assistant Superintendent. S. F. Adams is now Chief Engineer, and John A. Holt Superintendent of Construction.

Danville, Olney & Ohio River.—The Court has appointed Charles Howard, of Boston, Receiver in place of James A. Eads, resigned.

Delaware Western.—At the annual meeting in Wilming ton, Jan. 8, the old board was re-elected as follows: Robert Garrett, Samuel Spencer, Osmun Latrobe, Baltimore; Perry Belmont, New York; Victor Du Pont, Wm. M. Canby, Wm. Canby, Wilmington, Del. The company is controlled by the Baltimore & Ohio.

East Broad Top.—At the annual meeting in Philadelphia, Jan. 8, the following were chosen: President, Wm. A. Ingham; Directors, Ario Pardee, George B. Markle, Edward Roberts, Jr., Edward R. Wood, Percival Roberts, Charles Hacker, Franklin A. Comly.

East & West, of Alabama.—The officers of this company, which has leased the Cherokee Railroad, are as follows: Ed. F. Browning, President, New York; A. G. West, Vice-President, Cedartown, Ga.; J. Hull Browning, Treasurer, New York; M. Crow, Secretary, New York; John Postell, Manager, Cross Plain, Ala.

Hartford & Harlem.—The directors of this new company are: N. W. Bruggerhoff, Darien, Conn.; Warren Day, Bridgeport, Conn.; H. G. Lewis, S. G. Thorne, John E. Bassett, Henry H. Killam, New Haven, Conn.; F. L. Higginson, Charles A. Whittier, Boston; A. M. Billings, Chicago, Ill.; Lewis M. Brown, Charles G. Francklyn, New York.

Illinois Central.—The following circular has been issued: "The working staff of this company, whose official jurisdiction extends over all lines in this company's system, is as follows: James C. Clarke, First Vice-President and General Manager, Chicago; E. T. Jeffery, General Superintendent, Chicago; J. F. Tucker, Traffic Manager, Chicago; J. C. Welling, General Auditor, Chicago; A. H. Hanson, General Passenger Agent, Chicago; Henry Schlacks, Superintendent of Machinery, Chicago.

"Heads of departments will organize and select, subject to approval, such officers as may be necessary on the several divisions, and instruct them in their duties.

"The heads of departments will be held responsible for the proper conduct of the company's interests intrusted to them, or to their departments."

Illinois & St. Louis.—A St. Louis dispatch says: "It appears that Col. Thomas McKissock has been appointed General Manager of the Madison County Ferry & Car-Transfer Company, instead of the Venice & Carondelet and Illinois & St. Louis Railroads, as previously announced.

Kingston, Walesca & Gainesville.—This company has been organized by the election of the following directors: Allen D. Candler, Gainesville, Ga.; D. B. Hamilton, Rome, Ga.; Wm. T. Wofford, Kingston, Ga.; J. A. Sharp, Canton, Ga.; Levi B. Nelson, A. M. Rheinhardt, Atlanta, Ga. The board elected Wm. T. Wofford, President.

Louisville & Nashville.—Mr. F. W. Vaughan has been appointed Consulting Engineer, with office in Louisville, Ky.

Louisville, New Albany & Chicago.—The following circular is dated Louisville, Ky., Jan. 1:

"The departments of the Auditor and the Purchasing Agent having been merged, Mr. G. C. Breed is appointed as Auditor and Purchasing Agent from date hereof."

Mr. Breed is a gentleman of very wide and varied railroad experience. His last position was as Purchasing Agent of the Louisville & Nashville road.

Mexican Central.—Mr. E. F. Stollenwerck is appointed Assistant Superintendent of Transportation in charge of the Second Division, from Silas north including the Guanajuato Branch, with his office in Silas, Mexico. Appointment took effect Dec. 15.

Mobile & Ohio.—Mr. Innis Hopkins has been appointed General Agent in St. Louis. He was recently with the Missouri Pacific road.

Natchez, Jackson & Columbus.—The full list of officers of this road is as follows: Wm. T. Martin, President; G. W. Koontz, Treasurer; J. H. Fitzpatrick, Secretary and Assistant Treasurer; B. Mickle, General Superintendent; C. O. Johnson, General Freight and Passenger Agent. General offices, Natchez, Miss.

Nebraska, Topeka, Iola & Memphis.—The officers of this road are as follows: Stephen G. Clarke, President; Harry M. Clarke, Vice-President and General Manager; George A. Bowles, Secretary and Treasurer; I. H. Richards, General Solicitor; Caleb H. Malin, General Superintendent. Offices, Girard, Kan.

Nesquehoning Valley.—At the annual meeting in Philadelphia, Jan. 8, the following were chosen: President, J. B. Moorhead; Directors, Francis R. Cope, Samuel Mason, W. G. Moorhead, W. P. Cresson, I. V. Williamson, William C. Ludwig, George Whitney, Joseph S. Harris, E. W. Clark, P. C. Garret, T. C. Henry, F. G. Yarnall. The road is owned by the Lehigh Coal & Navigation Co.

New York, Chicago & St. Louis.—At a meeting in New York last week, the following directors were chosen to fill vacancies made by resignation: William K. Vanderbilt, Cornelius Vanderbilt, H. McK. Twombly, W. C. Whitney, Augustus Schell, Gen. George J. McGee, James Tillinghast, Anson J. Stager, J. H. Wade, and Charles Hickox.

New York City & Northern.—At the annual meeting in New York, Jan. 8, the following directors were chosen: R. M. Galloway, L. May, A. F. de Navarro, J. F. de Navarro, J. P. Kennedy, L. C. Livingston, G. J. Forrest, C. F. Woerishoffer, J. S. Stout, A. V. Stout, C. C. Leary, C. K. Garrison, M. Wood.

New York, New Haven & Hartford.—At the annual meeting in New Haven, Conn., Jan. 10, the following directors were elected: George J. Watrous, Edward M. Reed, Wm. D. Bishop, Wilson G. Hunt, Geo. N. Miller, C. W. Chapin, A. R. Van Nest, Henry O. Robinson, E. H. Trowbridge, Nathaniel Wheeler, C. M. Pond, Augustus Schell, W. H. Vanderbilt. There is no change from last year.

New York, Pittsburgh & Chicago.—At the annual meeting in Pittsburgh, Jan. 8, the following were chosen: President, James J. Negley, Pittsburgh; Directors, H. E. Collins, W. N. Riddle, William Schmertz, D. W. C. Carroll, Pittsburgh; Henry Day, W. S. Gurnee, Thomas P. Simpson, F. W. Lockwood, New York; Charles Siedler, Jersey City; General James S. Robinson, Kenton, O.; L. Scott, Waynesburg, O.

New York Railroad Commission.—The Governor of New York on Jan. 10 sent to the Senate the following names as Railroad Commissioners: John D. Kernan, of Utica; William E. Rogers, of Putnam County, and John O'Donnell, of Lewis County.

William E. Rogers was born in Philadelphia in 1846. He entered the West Point Military Academy in 1863, was graduated No. 6 in his class in 1867, and was commissioned lieutenant in the United States Engineer Corps. He was immediately ordered to duty on a survey of Lake Superior and the surrounding region. He then resigned from the army in October, 1869, and since then he has been engaged in his profession as a civil engineer. He was employed by the Delaware, Lackawanna & Western Railroad Company in laying out and constructing the extension of their road from Birmingham to Buffalo, but left their service in 1881. He is appointed as a Republican and as the experienced railroad man of the Commission, according to the law.

John D. Kernan, the Democratic member of the Commission, was born in Utica 1844. He was graduated from Seton Hall College, New Jersey, in 1863, whereupon he entered upon the study of law, and on his admission to the bar in 1866 began practice with his father, ex-Senator Kernan, and a brother in Utica. He has since that time been engaged in the active practice of his profession. He has been regarded as one of the most laborious and promising lawyers in the central part of the state. Though an active and pronounced Democrat he has never held a political office.

John O'Donnell, the Anti-Monopoly member of the Commission, is about 50 years old, and is a journalist and

a politician, and a resident of Lowville, Lewis County. He represented his Senatorial district in 1868 and 1869, and was Clerk of the Assembly in 1873 and 1874. During the discussion of the Railroad Commission Bill last winter he attended closely upon the sessions of the Legislature, and was undoubtedly of no inconsiderable influence in securing a passage of the bill as it now is. He was the member of the Commission nominated under the terms of the law by the Board of Trade and Transportation and other organizations.

New York, West Shore & Buffalo.—At the annual meeting in New York, Jan. 10, the following gentlemen were elected directors for the ensuing year: Horace Porter, Henry Villard, John W. Ellis, G. M. Pullman, C. F. Woerishoffer, R. T. Wilson, H. Victor Newcomb, H. K. McHarg, Frederick Billings, Charles Lanier, John J. McCook, Theo. Houston, Charles Paine.

Oil City & Chicago.—At the annual meeting in Philadelphia, Jan. 8, the following were chosen: President, J. W. Jones; directors, C. H. Clark, George F. Tyler, E. A. Rollins, B. K. Jamison, Archer N. Martin, Isaac N. Seligman, C. H. Allen, E. L. Owen, P. P. Pratt, E. P. Beals, Wm. Patterson. The road is controlled by the Buffalo, Pittsburgh & Western.

Pennsylvania & New York.—At the annual meeting in Philadelphia, Jan. 8, the following officers were elected: President, R. Asa Packer: Directors, Robert H. Sayre, Charles Hartshorne, Victor E. Piollet, Garrett B. Linderman, H. E. Packer, Robert Lockart, Wm. H. Sayre, Elisha P. Wilbur, James I. Blakeslee, Howard Elmer, Elisha A. Hancock, Frederick Mercur. The road is controlled by the Lehigh Valley.

Pennsylvania Railroad Leased Lines.—At meetings held in Philadelphia, Jan. 8, officers were chosen for the following companies, whose lines are leased to the Pennsylvania Railroad Co: *Germantown, Norristown & Phœnixville.*—President, J. N. DuBarry; Directors, D. B. Cummings, John P. Green, H. H. Houston, Henry M. Phillips, G. B. Roberts, N. Parker Shortridge, John C. Sims, Jr., Edmund Smith, Henry D. Welsh, and J. Price Wetherill. At a subsequent meeting of the board, Mr. DuBarry tendered his resignation as President, and John P. Green was chosen to fill the vacancy.—*Lock Haven & Clearfield.*—President, J. N. DuBarry; Directors, John P. Green, Strickland Kneass, Wistar Morris, G. B. Roberts, N. Parker Shortridge, Edmund Smith. *Moshannon & Clearfield.*—President, J. N. DuBarry; Directors, John P. Green, Strickland Kneass, Wistar Morris, G. B. Roberts, N. Parker Shortridge, Edmund Smith.—*Phœnixville & West Chester.*—President, J. N. DuBarry; Directors, John P. Green, Strickland Kneass, Wistar Morris, G. B. Roberts, N. Parker Shortridge, Edmund Smith, Henry D. Welsh, J. Price Wetherill. *Ridgway & Clearfield.*—President, J. N. DuBarry; Directors, John P. Green, G. B. Roberts, N. Parker Shortridge, Edmund Smith, Henry D. Welsh, J. Price Wetherill. *Riverfront.*—President, Strickland Kneass; Directors, G. R. Roberts, J. N. DuBarry, Wistar Morris, S. M. Felton, N. P. Shortridge, Edmund Smith, Henry D. Welsh, Frank Thompson; Secretary and Treasurer, James R. McClure. *Susquehanna & Clearfield.*—President, J. N. DuBarry; Directors, John P. Green, Strickland Kneass, Wister Morris, G. B. Roberts, N. Parker Shortridge, Edmund Smith.

Philadelphia & Reading.—At the annual meeting in Philadelphia, Jan. 8, the following were chosen: President, Franklin B. Fowen; managers, J. B. Lippincott, Henry Lewis, I. V. Williamson, Eckley B. Coxe, Edward C. Knight, Joseph B. Altemus; Secretary, Albert Foster; Treasurer, Samuel Bradford. There is no change from last year.

Philadelphia & Reading Leased Lines.—At the annual meetings in Philadelphia, Jan. 8, officers were chosen for lines leased and controlled by this company as follows: *Allentown.*—President, G. A. Nicolls; Directors, J. B. Lippincott, Henry Lewis, I. V. Williamson, E. C. Wright, F. B. Gowen, Eckley B. Coxe: Secretary, Howard Hancock; Treasurer, John Welch. *East Mahanoy.*—Same as the above. *Chester & Delaware River.*—President, G. A. Nicolls; Directors, J. B. Lippincott, F. B. Gowen, Henry Lewis, Joseph B. Altemus, Eckley B. Coxe, William Ward; Secretary, Howard Hancock; Treasurer, John Welch. *Danville & Shamokin.*—President, Franklin B. Gowen; Directors, J. B. Lippincott, I. V. Williamson, Henry Lewis, Joseph B. Altemus, Edward C. Knight, Eckley B. Coxe. *East Pennsylvania.*—President, G. A. Nicolls; Directors, J. B. Lippincott, F. B. Gowen, I. V. Williamson, Thomas Hart, Jr., Beauvea Borie, Hiester Clymer, George D. Stitsel, J. L. Stichter; Secretary, Howard Hancock; Treasurer, John Welch. *North Pennsylvania.*—President, Franklin A. Comly; Directors, John Jordan, Jr., William C. Ludwig, Edward C. Knight, Alfred Hunt, Thomas Smith, Ario Pardee, James H. Stevenson, Richard J. Dobbins, Charles A. Sparks, Edwin H. Fitler, Thomas P. Stotesbury, Thomas Cochran. *Northeast Pennsylvania.*—President, Joshua Comly; Directors, John Jordon, Jr., William C. Ludwig, Edward C. Knight, Alfred Hunt, James H. Stevenson, Richard J. Dobbins, Charles A. Sparks, Franklin A. Comly, Thomas B. Stotesbury, C. J. Mitchell, Isaac Warner, Jr., I. Newton Evans. *Reading & Columbia.*—President, G. A. Nicolls; Directors, J. B. Lippincott, J. N. Hutchinson, Henry Lewis, Frederick Lauer, I. V. Williamson, Thomas Baumgardner, F. B. Gowen, William Latimer Small, Joseph B. Altemus; Francis W. Christ, Eckley B. Coxe, Philip Arndt; Secretary, Howard Hancock; Treasurer, John Welch. *Shamokin, Sunbury & Lewisburg.*—President, S. P. Wolverton; Directors, A. H. Dill, John C Smith, Levi Rooke, Ira T. Clement, H. E. Davis, John Haas, L. H. Case; Secretary, Howard Hancock; Treasurer, John Welch. *Chestnut Hill.*—President, Coffin Colket; Directors, Joseph Patterson, William L. Schaffer, F. B. Gowen; E. H. Well, W. W. Colket, A. A. Dougherty, W. G. Wilson, Lewis Elkin, J. B. Townsend, H. A. Smith, C. F. Colket.

Philadelphia, Wilmington & Baltimore.—At the annual meeting in Wilmington, Del., Jan. 8, the old board was re-elected as follows: Isaac Hinckley, S. M. Felton, S. M. Shoemaker, Jacob Tome, Charles Warner, William Sellers, Christian Febiger, George B. Roberts, Frank Thomson, John P. Green, J. N. Du Barry, Wistar Morris, Edmund Smith, Henry M. Phillips, Benjamin F. Newcomer. The board elected Isaac Hinckley, President; Frank Thomson, Vice-President; Robert Craven, Secretary and Treasurer.

Pittsburgh, Chartiers & Youghiogheny.—At the annual meeting in Pittsburgh, Jan. 3, the following were chosen: President, J. E. Swartz; Directors, Jacob Henrici, Henry Hice, Edward Gregg, O. P. Scaife, John Reeves, Roger Hartley, John G. MacConnell, J. Ferguson, Thomas MacConnell, Robt. Wardrop: Treasurer, Robt. Wardrop; General Manager and Chief Engineer, Jos. Ramsey, Jr.; Secretary, R. D. Hill.

Pittsburgh & Lake Erie.—At the annual meeting in Pittsburgh, Jan. 8, the old officers were re-elected as follows: President, Jacob Henrici; directors, David Hostetter, James I. Bennett, M. W. Watson, James M. Bailey, Herbert DuPuy, Ralph Bagaley, John Reeves, James M. Schoonmaker, A. E. W. Painter, J. H. Devereux, John Newell, D. Leet Wilson.

Pittsburgh, McKeesport & Youghiogheny.—At the annual meeting in Pittsburgh, Jan. 8, the following were chosen: President, W. C. Quincy; directors, Jacob Henrici, David Hostetter, James I. Bennett, M. W. Watson, Henry Hice, J. H. Devereux, W. H. Vanderbilt, Cornelius Vanderbilt, James Tillinghast.

Pittsburgh & Northern.—At the annual meeting in Pittsburgh, Jan. 8, the following were chosen: President, A. G. Hatry; Directors, Jas. Callery, V. Matthews, J. D. Callery, J. E. Downing, J. J. Gillespie, J. D. Downing, F. M. Magee; Secretary, A. C. McCallam.

Pittsburgh & Western.—At the annual meeting in Pittsburgh, Jan. 8, the following were elected: President, James Callery, Pittsburgh; directors, J. W. Chalfant, M. K. Moorhead, A. M. Marshall, Jacob Painter, Jr., H. W. Oliver, Jr., Pittsburgh; Solon Humphreys, Walston H. Brown, John D. Downing, Anthony I. Thomas, Russell Sage, John T. Terry, New York.

Pittsburgh, Youngstown & Chicago.—At the annual meeting in Pittsburgh, Jan. 8, the following were chosen: President, O. H. Andrews, Youngstown, O.; directors, W. J. Hitchcock, L. E. Cochran, Youngstown, O.; W. J. McKinney, J. H. Wade, William Chisholm, S. S. Evart, Cleveland; W. S. Bissell, J. A. Caughey, William B. Rodgers, William M. Short, Pittsburgh; Robert Garrett, Baltimore.

South Carolina Railroad Commission.—Under the new law, which provides for a board of three commissioners, the following have been appointed: Millege L. Bonham, Thomas B. Jeter and Legare S. Walker. Gov. Bonham was formerly Governor of the state and was the first (and only) Commissioner under the old law; Mr. Jeter is also an ex-governor, and was at one time President of the Spartanburg & Union Co.; Mr. Walker is a Charleston merchant of high standing.

Southern Central.—J. W. Dwight has been appointed General Traffic Manager, with office at Dryden, N. Y.

Southern Maryland.—The officers of this company are: John Van Riswick, President, Washington; J. H. Linville, Vice-President, Philadelphia; Frank Hume, Treasurer; T. A. Lambert, Secretary; James L. Meigs, Chief Engineer, 64 Equitable Building, Boston, Mass.; Robert Knight, Superintendent; C. R. Joyce, Master Mechanic, Brandywine, Md.

Toledo & Indianapolis.—At the annual meeting last week the following directors were chosen: T. P. Brown, C. H. Coy, N. W. Dyer, J. K. Hamilton, W. T. Walker. The board elected T. P. Brown President; C. H. Coy, Vice-President and Treasurer; N. W. Dyer, Secretary; P. Dowling, General Manager: J. H. Hamilton, Attorney.

Wheeling & Lake Erie.—At the recent annual meeting the following directors were chosen to serve three years: George W. Davis, Noah H. Swayne, Jr.; both of Toledo.

Wisconsin Central.—F. N. Finney, General Manager recently announced the following changes: C. Campbell was relieved from the duties of Superintendent and appointed Purchasing Agent, with office at Milwaukee; C. R. Hanchett, previously Assistant Superintendent, was appointed Acting Superintendent, in charge of the Middle and Northern divisions of the Wisconsin Central Railroad, and of the Wisconsin & Minnesota Railroad; A. A. Allen, Superintendent of the Milwaukee and Eastern divisions, has also been assigned to the charge of the Southern Division.

PERSONAL.

—Mr. P. W. Hoblitzell, formerly connected with the Baltimore & Ohio, and recently a contractor on the Atlantic & Pacific, died in Gallup, N. M., Dec. 25.

—Mr. Wm. J. Latta, Superintendent of the Philadelphia Division of the Pennsylvania Railroad, is in ill health, and has gone to Florida, in hopes that he may be benefited by that climate.

—Mr. Seth Frink, for many years General Freight Agent of the St. Louis, Iron Mountain & Southern, and more recently General Freight Agent of the Missouri Pacific system, has been appointed General Manager of the recently organized St. Louis Freight Bureau. No man better qualified for the position than Mr. Frink could have been selected.

—Mr. W. H. Osborn, it is understood, withdraws from all official connection with the Chicago, St. Louis & New Orleans and the Illinois Central, after more than 20 years' service. During most of that time he has controlled or largely influenced the policy of the company as the representative of the English stockholders.

—Mr. J. H. Parsons, who for the last ten years has held the position of Superintendent of the Western Division of the Lake Shore & Michigan Southern Railroad, has resigned to accept a similar position on the Chicago & Atlantic. Mr. Parsons is a thorough railroad man, having gone through the various grades of station agent, track-master and superintendent. For the last twenty years he has been connected with the Lake Shore road.

—Mr. S. T. Fuller has resigned his position as General Superintendent and Chief Engineer of the Mexican National and Texas Mexican roads, after a period of arduous service in the organization of the working staff of those lines and in their location and construction. Mr. Fuller was formerly Chief Engineer of the Philadelphia, Wilmington & Baltimore, and is well known as an engineer of ability and experience.

—Gen. Theodore G. Ellis died at his home, in Hartford, Conn., at the age of 53 years. He was a native of Boston and was educated in the grammar-school of that city. He began business as a civil engineer and for several years was engaged as surveyor for different railroad enterprises in New England. In 1854 he came to Connecticut as an engineer on the western section of the old Hartford, Providence & Fiskill Road, now a part of the New York & New England. Subsequently he was engaged in mining surveys in Mexico, and in 1861 established himself in professional business in Hartford. In June, 1862, he was made Adjutant of the Fourteenth Connecticut Volunteers and came home with that regiment as its Colonel, Congress subsequently giving the brevet rank of Brigadier General for meritorious service in the field. At the time of his death he was in charge of the Government works on the Connecticut river. He was a member of the American Society of Civil Engineers, of which he was Vice-President from 1873 to 1877.

TRAFFIC AND EARNINGS.

Chicago-St. Louis-Kansas City Passenger Rates.

At a meeting held in Chicago, Jan. 4, the plans for the strict maintenance of passenger rates between Chicago and St. Louis, Chicago and Kansas City and St. Louis and Kansas City were satisfactorily agreed upon. The position of Secretary of the association was tendered to Mr. James Barker, at present General Agent of the Wisconsin Central, and the gentleman was informed of his appointment. The agreement decided upon will take effect Feb. 1. The penalty for cutting tickets was left to the Secretary and Passenger Agents, and the penalties for breaches of other portions of the agreement were fixed at $250 for the first and $500 for the second offense. The agreement will remain in force one year. No disposition was made of the Lake Erie & Western tickets, which have been a vexed question for some time.

Lake Superior Iron Ore.

The total tonnage of iron ore over the Chicago & Northwestern (Peninsula Division) in 1882 is reported by the Marquette *Mining Journal* as follows in tons:

	Marquette District.	Menominee District.	Total.
To Escanaba for shipment by lake	648,244	1,088,209	1,736,453
To Escanaba for shipment by rail	32,522	37,510	70,032
Total	680,766	1,125,719	1,806,485

The shipments of pig iron over this road were 8,775 tons.

The tonnage of iron ore over the Marquette, Houghton & Ontonagon road for the year was:

To Marquette for shipment	1,013,499
To local points for furnaces	108,516
Total	1,122,015

The pig iron carried over this road was 9,640 tons.

The total output of iron ore for eight years is reported by the *Mining Journal* as follows:

	Tons.		Tons.
1875	910,840	1879	1,414,182
1876	963,311	1880	1,987,598
1877	1,025,129	1881	2,321,315
1878	1,125,093	1882	2,943,314

The total production of iron ore from the Lake Superior Region up to the end of 1882 was 20,585,757 tons.

The total production of pig iron in 1882 was 72,962 tons, an increase of 20,009 tons, or 37.7 per cent. over 1881. The total output of pig iron in the region up to the end of 1882 was 916,213 tons.

Pacific Through Freights.

Shipments of through freight eastward over the Central and Southern Pacific roads in November were, in tons:

	Central.	Southern.	Total.
San Francisco	5,334	3,087	8,421
Interior points	1,181	1,934	3,115
Total	6,515	5,021	11,536

Leading items of freight were 1,045 tons wool, 854 tons sugar, 863 tons salmon and 562 tons tea.

Buffalo Live Stock Traffic.

Receipts and shipments of live-stock at Buffalo last year were as follows, in car-loads:

	Receipts.		Shipments.	
	1882.	1881.	1882.	1881.
Cattle	37,385	43,226	34,757	41,149
Hogs	17,016	17,695	13,498	13,854
Sheep	7,305	5,562	6,309	4,743
Horses	1,031	1,101	930	1,010
Total cars	62,737	67,584	55,524	60,756

The Buffalo *Express* says: "The average number of cattle received in each car is set down at 17, of hogs 117, of sheep 200, and of horses 16. According to these estimates, the total receipts of the year were 575,545 cattle, 1,990,872 swine, 1,461,000 sheep, and 16,496 horses—4,043,913 animals all told. There was a decrease in the number of cattle coming forward of 99,297 head; a decrease in hogs of 81,549 head; an increase in sheep of 348,600 head, and a decrease in horses of 1,120 head. The shipments of cattle show a total decrease of 108,664 head; in hogs, a decrease of 41,652 head; in sheep, an increase of 313,200 head, and in horses a decrease of 800 head.

"While the through run of cattle shows a large falling off as compared with the movement of last year, it has no significance so far as the business at this point is concerned. In no past year in the history of the trade have more cattle been put on the Buffalo market and sold at a profit than in 1882."

Excess Baggage Charges.

The new baggage agreement as adopted at a meeting held last week in Chicago by the roads leading west from that city, provides that not more than 150 lbs. shall be carried free for each full ticket and 75 lbs. for each half ticket. No piece weighing more than 250 lbs. will be carried as baggage.

Commercial travelers are to be allowed 200 lbs. free, but no more than 750 lbs. shall be carried for one traveler as baggage. Excess baggage books are to be provided, but must not be sold at a less rate than $4 per 1,000 miles for each 100 lbs., nothing less than 25 cents per 100 lbs. to be accepted for 50 miles or less. The agreement is to be in force from Feb. 1.

Grain Movement.

For the week ending Dec. 30 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets, and receipts at the seven Atlantic ports have been in bushels, for the past nine years:

Year.	Northwestern receipts.	Northwestern shipments.	Atlantic receipts.
1874	2,147,360	799,017	1,404,357
1875	2,093,225	968,855	1,630,724
1876	2,452,664	964,795	1,882,838
1877	1,528,048	1,099,339	3,561,847
1878	2,548,745	1,149,265	2,569,146
1879	4,232,089	918,954	3,114,803
1880	2,802,699	1,648,451	2,310,533
1881	2,517,143	1,629,536	1,287,007
1882	6,433,124	2,520,828	2,755,043

The receipts of the Northwestern markets in this last week of the year were thus very much larger than in any corresponding week of previous years, and 155 per cent. more than last year. They were also 40 per cent. more than in the previous week of this year and were the largest since August, and with the exception of the last week of July and the last two weeks of August were larger than in any other week of the year 1882. They were indeed larger than in any winter week heretofore.

The cause of these extraordinary receipts we cannot guess. In all grains the receipts were very large, and also in flour, but the receipts of oats were extraordinary. The shipments of these markets were also larger than in the corresponding week of any previous year, and 50 per cent. more than last year. The receipts from these shipments must have been about at the rate of $371 this year for every $100 last year. Of the shipments 65,491 bushels (2.6 per cent.) went down the Mississippi.

The Atlantic receipts for the week were 46 per cent. more than in 1881, and more than in 1880, but less than in 1879 and 1877. They were the largest since the first week of December.

Of the Northwestern receipts for the year Chicago had

54.5 per cent., St. Louis, 13.1, Milwaukee 10.2, Toledo, 9.5, Peoria 6 9, Detroit 3.5, Duluth 1.5, and Cleveland 0.8 per cent. The chief part of the gain over the previous week was at Chicago, whose receipts have been as large but once before this year, but Toledo and Milwaukee also show large gains, especially Toledo.

Of the Atlantic receipts New York had 43.9 per cent., Baltimore 17.7, Boston, 14,2, Philadelphia 13.6, New Orleans 7.5, Portland 2.3, and Montreal 0.8 per cent.

Of the exports for this week ending Dec. 30, New York had 46.1 per cent., New Orleans 22, Baltimore 18.8, Philadelphia 5.6, Portland 5.2, and Boston 2.3 per cent.

For the week endin g Jan. 3 the exports from these ports have been :

	1882.	1881.	1880.
Flour, bbls	185,155	34,103	120,499
Grain, bus	1,901,220	1,051,474	2,206,164
Flour and grain, bus	2,734,417	1,204,937	2,748,409

The exports were thus very nearly as large as in 1880, and more than twice as large as last year.

For the week ending Jan. 6 receipts and shipments at Chicago and Milwaukee were :

	1883.	1882.	Increase.	P.c.
Flour, bbls	215,126	138,504	76,622	55.3
Grain, bus	2,849,672	1,585,947	1,263,725	79·6

For the week ending Jan. 6 receipts at four Eastern ports were :

Bushels;	New York.	Boston.	Phila.	Baltimore.	Total.
1883	1,566,330	350,300	317,000	639,092	2,872,222
1882	632,613	232,750	117,650	241 403	1,224 416
1881	490,483	301,876	144,700	302,609	1,239,668
P. c. of total :					
1883	54.5	12.2	11.0	22.3	100.0
1882	51.7	19.0	9.6	19.7	100.0
1881	39 6	24.3	11.7	24.4	100.0

Philadelphia and Baltimore received 33.3 per cent. of the whole this year, against 29.3 per cent. last year and 36.1 in 1881. Never before were there so large receipts either of flour or grain in a January week. By far the larger part of the grain received now is corn and oats, wheat making last week but 548,149 bushels of the 2,849,672. But the flour receipts were equivalent to 968,067 bushels of wheat, and the flour and wheat together are nearly one half more than the corn.

Coal.

Anthracite coal tonnages for the year ending Dec. 31 are reported as follows, the tonnage in each case being only that originating upon the line to which it is credited:

	1882.	1881.	Inc. or Dec.	P.c.
Phila. & Reading	7,047,360	6,945,243 I.	102,117	1.5
North. C., Sham. Div. & Summit Branch R. R.	1,238,842	1,014,823 I.	224,019	22.3
Sunbury, Hazleton & Wilkesbarre	51,756	10,926 I.	41,830	383.7
Pennsylvania Canal	529,026	457,260 I.	71,766	15 8
Central of N. J., Lehigh Div.	4,564,402	4,458,066 I.	106,336	2.4
Lehigh Valley	6,009,384	5,675,399 I.	333,685	5.9
Pennsylvania & N. Y.	194,680	105,454 I.	89,226	84.6
Del., Lacka. & Western	4,595,518	4,271,953 I.	322,565	7.4
Del. & Hudson Canal	3,581,973	3,581,781 I.	192	....
Pennsylvania Coal Co.	1,438,821	1,406,059 I.	32,762	2.3
State Line & Sullivan	64,925	64,200 I.	725	1.1
Total	29,316,387	27,991,164 I.	1,325,223	4.7

The tonnage last year was the largest ever reported, and indicates a prosperous season generally for the trade. The total tonnage for eight years past has been as follows :

	Tons.		Tons.
1882	29,316,887	1878	17,127,681
1881	27,991,164	1877	20,134,739
1880	23,096,111	1876	18,105,339
1879	25,769,385	1875	19,441,336

The increase last year over 1878, the worst year of the eight, was 12,189,206 tons, or 71.2 per cent.

The anthracite coal tonnage of the Belvidere Division, Pennsylvania Railroad, for the year was:

	1882.	1881.	Increase.	P.c.
Coal Port for shipment	101.786	84,399	17,387	20.7
S. Amboy for shipment	730,957	693.551	37,406	5.4
Local points on N. J. lines	778,407	732,082	46,325	6.3
Co.'s use on N. J. lines	133,473	115,851	17,622	15 2
Total	1,744.623	1,625,883	118,740	7.3

Of the total last year 1,452,906 tons were from the Lehigh and 291,717 tons from the Wyoming Region, against 1,354,436 tons Lehigh and 271,447 tons Wyoming in 1881.

Actual tonnage passing over the Pennsylvania & New York road for December, the first month of the fiscal year, was as follows:

	1882.	1881.	Decrease.	P. c
Anthracite	83,805	98,951	18,146	15.3
Bituminous	32,858	35,948	3,080	8.6
Total	116,663	134,899	18,236	13.5

The larger part of the anthracite is received from the Lehigh Valley road, and carried through to Waverly.

Actual tonnage passing over the Huntingdon & Broad Top road for the year was as follows :

	1882.	1881.	Inc. or Dec.	P. c.
Broad Top coal	271,217	204,819	I 66,398	32.3
Cumberland coal	208.031	313,601	D.105,570	33.6
Total	479,248	518,420	D. 39,172	7.4

The Broad Top coal is mined on the line of the road; the Cumberland coal is carried through from Mt. Dallas to Huntingdon for the Pennsylvania Railroad.

Cumberland coal tonnage over the lines leading directly from the mines are reported as follows by the Cumberland (Md.) *Civilian* for the year ending Dec. 31 :

	1882.	1881.	In. or Dec.	P. c.
Cumberland & Penn	1,034,195	1,930,648	D. 896,453	46,4
George's Creek & Cumberland	202,479	211,955	D. 9,476	4.5
West Va. Central & Pittsburgh	254,960	11,257	I. 243,703	....
Direct from mines out of region	31,346	77 576	D. 46,230	59.3
Total	1,522,980	2,231,436	D. 708,456	31.8

The shipments away from the region for the year were as follows :

	1882.	1881.	Decrease.	P. c.
Balt. & Ohio R. R.	1,046.709	1,443,755	397,046	27.5
Bedford Div., Pa. R. R.	185.359	278.598	93,239	33.4
Ches. & Ohio Canal	269,989	505.365	235,376	46.6
Total	1,502,057	2,227,718	725,661	32.6

Local consumption will account for the difference in the statements

The Rich Hill (Mo.) *Mining Review* reports shipments of coal from the mines about that place in 1882 as follows: Missouri Pacific, 27.221 cars; Kansas City, Fort Scott & Gulf, 23,477; total, 50,698 cars, or 329,537 tons. This does not include coal mined for local use.

The production of the mines of the Colorado Coal & Iron Co. in 1882 was 511,239 tons of coal and 92,770 tons of coke; 604,009 tons in all.

Shipments of coal over the Utah Central road in 1882 were: Coal, 115,235; coke, 45,283; total, 160,518 tons.

Shipments from the mines on the line of the Union Pacific road in 1882 were 655,496 tons, of which 425,000 tons were for the use of the company.

San Francisco coal receipts in 1882 were 845.880 tons, of which 320,000 tons were Pacific Coast coals, 48,500 tons Eastern (anthracite and Cumberland), 151,800 tons British Columbia, 163,127 tons Australian and 162,453 tons English coal.

Railroad Earnings.

Earnings for various periods are reported as follows:

Year ending Dec. 31:	1882.	1881.	Inc. or Dec.	P.c.
Bur., Cedar Rap. & No	$2,800,679	$2,259,036 I.	$541.643	24.0
Central Iowa	1,165,178	985,613 I.	179,565	18.4
Chi. & Alton	8,211,989	7,557.740 I.	654,249	8 6
Chi. & Eastern Ill.	1,773,023	1,640,091 I.	112,932	6.9
Chi. & Gd. Trunk	2,274.263	1,563,025 I.	711,243	45.5
Chi. Mil. & St. P.	20,387.000	17,025,456 I.	3,361,544	19.7
Chi. & Northwest.	23,828,978	21,849,209 I.	1,979,769	9.1
Cleve., Akr. & Col	505,967	423,698 I.	82,269	19.4
Col., Hock. Vy. & Tol	2,867,288	....	.....	....
Hann. & St. Jo	2,303,366	2,257,264 I.	46,102	2.1
Ind., Bloom. & W.	2,641,662	2,487,569 I.	154,093	6 2
Long Island	2,300,018	1,974,861 I.	325,157	16.5
Louisv. & Nash	12,975,236	11,344,362 I.	1,630,874	14.4
Mil., L. S. & W	886.152	620,228 I.	265,924	42.9
Met. Elevated	2,719,662	2,537,382 I.	182,280	7.2
Mo. Pacific lines:				
Central Branch	996,493	967,778 I.	28,715	3.0
Int. & Gt. No	3,319,540	2,788,106 I.	531,434	19.1
Mo., Kan. & T	6,421,517	5,427,256 I.	994,261	18.3
Mo. Pacific	8,038,194	6,673,295 I.	1,364,899	20.4
St. L., I. M. & So	7,581 635	7,337,662 I.	243,973	3.3
Tex. & Pacific	5,143,169	3,977,412 I.	1,165,757	29.1
N. Y. Elevated	3,383,638	2,932,242 I.	457,396	15.7
Norfolk & West	2,422,310	2,267,289 I.	155 021	6.8
Northern Pacific	7,009,340	4,070,223 I.	2,939,117	72.2
Oreg. Ry. & Nav. Co	4,955,500	4,408,680 I.	546,820	12.4
St. L. & San F	3,582,756	3,160.240 I.	422,516	13.4
St. P. & Duluth	1,105,410	733,862 I.	371,548	50.6
St. P., Minn. & M.	8,763,921	4,878,959 I.	3,884,962	79.4
Tol., Cin. & St. L.	942,436	700,940 I.	241,496	34.5
Union Pacific	30,236,668	29,700,306 I.	536,362	1.8
Month of November:				
Rochester & Pitts.	$31,838	....	....	.....
Net earnings	7,042	....	.....	.....
Month of December:				
Bur., C. R. & No.	$246,062	$232,812 I.	$13,250	5.7
Central Iowa	102,229	120,122 D.	17,893	14.9
Chi. & Alton	699,323	646.812 I.	52,511	8.1
Chi. & Eastern Ill.	135.783	152,753 D.	16,970	11.1
Chi., Mil. & St. P.	1,964,000	1,854,269 I.	109,731	5.9
Chi. & No. West	1,718,384	1,855,477 D.	137,093	7.4
Cleve., Ak. & Col.	39.575	37,974 I.	1,601	4.2
Col., H.Vy. & Tol.	240,555	....	.....	.....
Hann. & St. Jo	239,869	194,369 I.	45,500	23.4
Ind., Bloom. & W.	205.211	192,622 I.	12,589	6 5
Little Rk. & Ft. S.	80,070	62,932 I.	17,138	27.2
L'tle Rk, M.R. & T	45,700	33.404 I.	12,296	39.2
Long Island	156,868	137,015 I.	19.853	14.5
Louisv. & Nash	1,215,757	1,153,789 I.	61,968	5.4
Mil., L. S. & W.	76,585	61,845 I	14,740	24.1
Metrop. Elevated	225,070	242,853 D.	17,783	7.3
Minn. & St. L.	147,761	126,594 I.	21,167	16.6
Mo. Pacific Lines:				
Central Branch	120,576	86,096 I.	34,480	40.0
In. & Gt. No	377,821	306,160 I.	71,661	23.4
Mo., Kan & Tex.	685.830	487,819 I.	198,011	40 6
Mo. Pacific	736,670	602.447 I.	134,223	22 3
St. L., I.M. & So.	781,305	709,498 I.	71,807	10 1
Tex. & Pacific	641,042	401,058 I.	239,984	59.8
N. Y. Elevated	329,361	267,667 I.	61,694	23.0
Norfolk & West	217,328	205,699 I.	11,629	51.6
Northern Pacific	543,258	349,724 I.	193,534	55.3
Ohio Southern	39,156	34,167 I.	4,989	14.7
Or. Ry. & Nav. Co.	275,900	378,785 D.	102,885	27 3
Net earnings	52,400	173,336 D.	120,936	69.9
St. L. & San Fran.	339,069	287,909 I.	51,160	17.8
St. P. & Duluth	90,348	76,779 I.	13,569	17.6
St P. Minn. & M.	752.666	528,262 I.	224,404	42.3
Tol., Cin. & St L.	79,634	74,044 I.	5,590	7.5
Union Pacific	1,284,497	2,257,004 I.	27,493	1.2
First week in January:	1883.	1882.		
Denver & R. G.	$89,000	$131,300 D.	$32,300	26.6
Long Island	36,235	22,235 I.	2,991	9.0
Northern Pacific	118,200	55,406 I.	62,794	113.4

Free Passes.

The new agreement adopted in Chicago in relation to passes is substantially as follows:

First—That the issue of free passes by the parties thereto to merchants in the cities of Chicago or Milwaukee, or merchants in the city of St. Louis, to be forwarded by them to their country customers, shall be entirely discontinued; and no passes shall hereafter be issued in that way.

Second—That the parties hereto shall withdraw their books of passes from Missouri River points, and entirely discontinue the practice of allowing their general agents to furnish free passes to merchants, not only at Missouri River points, but at all points, East and West.

Third—That the object of this agreement is to entirely discontinue the issue of free transportation for the purpose of influencing the movement of freight traffic; but each road may exercise its own judgment with reference to furnishing free transportation to promote local interests on its own line.

Fourth—That the issue of 1,000-mile tickets at two cents per mile shall continue in force until otherwise agreed.

Fifth—That the rules and regulations now in effect upon the several roads parties hereto, governing the passage of persons in charge of live-stock, shall remain in force until they are changed by mutual consent, and that such persons be returned free in the following manner: Live-stock contracts shall be surrendered, in place of which a special form of return drover's ticket shall be issued. The form of said ticket shall be that now in use by the Chicago, Burlington & Quincy and Chicago & Northwestern railway companies, with the addition that such ticket be so limited as to require the person to whom it is issued to commence its use for a continuous passage within 24 hours after the date of its issue.

Sixth—That parties in charge of rolling stock be passed in both directions, provided that one man only shall be passed with each locomotive.

Seventh—That authority to issue passes for commercial purposes be withdrawn from division officers of all grades, and that all transportation covered by this agreement be issued by the General Manager or the head of the freight department of the respective parties hereto; provided, also, that said division officers, general agents or other like officers shall be prohibited from procuring passes over any railroad for the use of persons engaged in commercial business.

Eighth—That this agreement shall be binding upon the parties hereto in all territory where two or more of them have a common interest; provided, however, that in territory where other roads than those parties hereto are located or interested, and such roads are not, or decline to be governed by the terms of this agreement, then the parties hereto thus affected shall be at liberty jointly, or by agreement among themselves, to act in such cases as, in their judgment, the circumstances may require.

The following roads are parties to the new agreement: Chicago & Alton; Chicago, Burlington & Quincy; Chicago, Milwaukee & St. Paul; Chicago & Northwestern; Chicago, Rock Island & Pacific; Hannibal & St. Joseph; Kansas City, St. Joseph & Council Bluffs; Illinois Central; Missouri Pacific; Wabash, St. Louis & Pacific.

RAILROAD LAW.

Liability on Through Bill of Lading.

In the United States Supreme Court, Jan. 8, a decision was rendered in the case of the Michigan Central Railroad Co,, plaintiff in error, vs. Paris Myrick, for the use of the Commercial National Bank of Chicago. The question raised by this case is whether a railroad company in the absence of a special contract, is responsible to a shipper for the safety of freight, after such freight has been transferred by it to another railroad company for transportation to its place of destination. The Court holds, first, that in accordance with the common law rule the carrier is liable only to the extent of his own route, and for safe storage and delivery to the next carrier : second, that the ticket or bill of lading given to the shipper by the railroad company in this instance was not a thorough contract, whereby the Michigan Central Co. agreed to transport the freight in controversy to Philadelphia. The judgment of the Court below, that the receipt did constitute such a through contract, is reversed, and the case remanded for a new trial. Opinion by Justice Field.

Liability for Free Passenger—Negligence.

The Supreme Court of Pennsylvania has just decided a railroad case of considerable interest. The decision was in the case of the Buffalo, Pittsburgh & Western Railroad Company against O'Hara, brought up on error to the Common Pleas of Forest County, Pa. Mrs. Ellen O'Hara, wife of an employé, was riding on a pass between Oil City and Trunkeyville, in Forrest County. The train was dashed into and she was scalded and otherwise injured. The jury awarded her $3,000, which sum was reduced to $2,000. On the face of the pass, in fine print, was a clause purporting to be a release of all liability for damage to the person or baggage of the party using the pass, resulting from the negligence of the company or its servants. The condition was in the following terms: "Conditioned that the person accepting this pass assumes all risk of accident to his person or property without claims for damages on this corporation. Good only for the person named." It was signed by the Superintendent and Supervisor. The Supreme Court held that "a common carrier cannot protect himself by special contract from liability for negligence. Against his extraordinary liability as a common carrier he may protect himself by such an agreement, but not from his liability as a simple bailee. It may well be doubted whether the provision in this pass being against accidents can be held applicable at all to cases where the injury has resulted from negligence. If the free pass in this case was unlawful the conductor should have demanded the regular fare, and his not doing so did not make O'Hara or his wife trespassers or destroy their rights as passengers." The lower court's judgment was affirmed.

OLD AND NEW ROADS.

Allegheny Central.—It is said that negotiations are pending between this company and the New York, Lake Erie & Western for a Rochester connection. The plan is to use the Erie's Buffalo Division from Swains to Caneseraga, then build about 10 miles of new road across to Danville and use the Erie track to Rochester. The agreement involves a close alliance with the Erie, and will, it is said, prevent the use of any of the Allegheny Central track for the Delaware, Lackawanna & Western's proposed line to Oleon.

Alma & Little Rock.—This road was recently completed from Alma, N. C., on the Carolina Central road, southwest to Alfordsville, 12 miles. It is a logging road, owned by the lumber firm of Wilkinson & Fore.

Arkansas State Railroad Bonds.—The Little Rock (Ark.) *Gazette* comments on the recent decision of the United States Circuit Court that the bonds issued by the state in aid of railroads are a lien upon the roads, as follows:

"As already explained, the railroad aid bonds were issued by the state under the act of 1868. They were accepted and used by five railroad companies, to which the following issues of bonds were made:

Little Rock & Fort Smith	$1,000,000
Little Rock, Pine Bluff & New Orleans	1,200,000
Mississippi, Ouachita & Red River	600,000
Memphis & Little Rock	1,200 000
Arkansas Central	1,350,000
Total	$5,350,000

"To which sum must be added 12 years' interest at 7 per cent.

"The Memphis & Little Rock Railway Co. owns and holds $938,000 of the $1,200,000 bonds originally issued to that corporation, and the bonds owned and held by the Little Rock & Fort Smith Railway Co. amount to $644,000. These bonds were purchased years ago upon advice of counsel, at very low figures, with a view of hedging against a possible decision by the courts holding the railroads and not the state liable for the bonds issued to those corporations. The remainder are outstanding. * * *

"Of the railway corporations above named, all but one—the Arkansas Central, which is understood to be in a bad condition—are thoroughly responsible and fully able to liquidate the claims due on these bonds. Two of them, as already explained, have taken the precaution to so provide as to make settlement easy should the recent decision be affirmed by the Supreme Court of the United States. * *

"The questions involved in these suits are of vital importance to the people of Arkansas. Of the railroad bonds authorized under the act of 1868, the issue to the railroads aggregated $5,350,000. They form a part of the grand total of $13,000,000 for years past in dispute, and to prevent the payment of which the proposed 'Amendment No. 1' to the constitution of the state of Arkansas was framed and submitted to the qualified electors in 1880."

Atlantic & North Carolina.—The Governor of North Carolina in his message to the Legislature recommends that the $1,266,000 stock in this road, owned by the state, be given to any parties who will complete the extension of the road begun by the Midland Co. to Salisbury.

Baltimore & Philadelphia.—This company has filed articles of incorporation for a railroad from Philadelphia to the Delaware line in the township of Upper Chichester, a distance of 21 miles. The road is the Pennsylvania section of the Baltimore & Ohio's new line from Baltimore to Philadelphia.

Boston, Hoosac Tunnel & Western.—At a meeting held in New York last week the directors of this company voted to stop all work west of the proposed connection with the West Shore road at a point some 5 miles west of Schenectady, to sell all its interest west of that point to the West Shore, the Boston, Hoosac Tunnel & Western confining its efforts to developing and improving its present road, which extends from the Massachusetts state line, 6 miles

west of the Hoosac Tunnel, to a connection with the Erie Canal, the New York Central and the West Shore roads, a few miles west of Schenectady, and its branches from Mechanicsville to Saratoga Springs. Joint contracts have also been entered into whereby the Hoosac Tunnel and West Shore roads agree to exchange traffic. Or in other words, the Boston, Hoosac Tunnel & Western will be utilized by the West Shore road for its principal New England connection via the Tunnel. At the same time, however, it is understood that the Boston, Hoosac Tunnel & Western will keep up its present connections with the Erie railway, and can take business from the Erie Canal, also, if found advisable.

Justice Lawrence, in the New York Supreme Court last week granted an injunction in favor of the Boston Hoosac Tunnel & Western Co., restraining the Continental Construction & Improvement Co., and others from parting with the possession of certain bonds, and Geo. J. Forrest and others from receiving possession of them. The suit is declared by members of the Construction Company to be a friendly one for the purpose of protecting alike the interests of the railroad and the Construction Company. The managers are virtually the same in both companies. The litigation marks the abandonment of the scheme for the construction of the Boston Hoosac Tunnel & Western west of Schenectady.

Canadian Pacific.—This company is now operating its main line from Winnipeg, Man., west to Regina, 358 miles; the branch from Winnipeg to St. Vincent, 68 miles, and the main line from Winnipeg eastward to Rat Portage, 135 miles. From Rat Portage to Thunder Bay, 165 miles, the track is laid, but the road has not yet been turned over by the contractors. There are also 42 miles of main line, 62 miles of branch line graded. There are on the road 96 engines, 40 passenger cars, 600 box and 2,400 flat cars.

On the line from Thunder Bay eastward along the north shore of Lake Superior to Lake Nipissing, very little work has yet been done.

Cape Fear & Yadkin Valley.—The Governor of North Carolina in his recent message says: "The General Assembly at its last session passed an act appointing a commission to sell the state's stock in this road. I pressed upon the Legislature by special message the importance of providing for the sale of the road as the speediest means of insuring its completion. Unfortunately, in passing the act, conditions were tacked on which made it almost impossible for a purchaser to comply with them. The commission did meet, however, and enter into a contract of sale; but the terms, as was expected, were not complied with and so nothing came of it. I have reason to believe that other parties will submit a proposition to you during your session to buy the state stock. If you do not make a sale of the property, then I advise you to strike out the rigid conditions in the act of last session and leave the commission free to sell the state's stock upon the best terms that can be had. The stock of the state in the road is $555,000, and it is this that it is proposed to sell. The grading is about completed to Walnut Cove, in the county of Stokes. This work has been done by convict labor entirely, and for it the state holds a first lien upon the property which may be discharged by the mortgage bonds of the company."

Carolina, Cumberland Gap & Chicago.—This company has executed mortgages to the Farmers' Loan & Trust Co., of New York, to secure issues of $10,000,000 first-mortgage 6 per cent. bonds and $7,000,000 second-mortgage income bonds. The projected line, none of which is completed, is from Aiken, S. C., to some point in Kentucky by way of the French Broad Valley, Morristown and Cumberland Gap.

Central Vermont.—A Boston dispatch last week stated that the time for signing the agreement of reorganization would be extended to Jan. 31. It now appears that this was not correct, and that the time was not extended. The Boston *Transcript* of Jan. 8 says: "The time assigned for signing assent to the plan of compromise among the security-holders of the Vermont Central and Vermont & Canada railroads has expired and has not been extended, so the negotiation is off, and whether or not a new one will come on remains to be seen. A majority of the Vermont & Canada interests assented, but the Central Vermont party, the managers of the roads, notwithstanding the fact that they put out the scheme themselves, neglected to sign; consequently there was not a majority of the trust debt subscribed. The suit for the foreclosure of the Vermont Central first mortgage, already heard by Judge Wheeler, of the United States Circuit Court, is expected to be decided by him at Rutland next Friday. The accounting by the managers for the operations of several years past, which was ordered by the Vermont Supreme Court under the Langdon suits, stands adjourned until April."

Another statement, however, is that the plan of reorganization has not been abandoned, but further action has been suspended on account of question raised as to the form of the new mortgages. It is hoped that this matter will be adjusted, and the plan carried out.

Chattanooga Western.—This company has been organized to build a short railroad line from Chattanooga, Tenn., to the summit of Walden's Ridge, where it is proposed to build a summer hotel and cottages, making a summer resort. The plan also includes an extension beyond the place chosen for the summer resort to the coal deposits on the ridge.

Cherokee.—This road, which is owned by the Cherokee Iron Co., has been leased for 99 years to the East & West Railroad Co., of Alabama, which is building an extension of the road westward to Birmingham, Ala.

Chicago & Evanston.—Surveys are being made for a line for this road from Libertyville, Ill., by Lake Geneva to some point on the Chicago, Milwaukee & St. Paul road.

Cincinnati, Indianapolis, St. Louis & Chicago.—The following statement is made for the six months ending Dec. 31, December partly estimated:

Gross earnings	$1,410,780
Expenses	860,712
Net earnings	$550,068
Interest, taxes and dividends	537,521
Surplus	$12,547

As compared with the corresponding period in 1881, there was an increase of $119,539, or 9.3 per cent., in earnings; an increase of $128,326, or 17.5 per cent., in expenses, and a decrease of $8,787, or 1.6 per cent. in net earnings.

President Ingalls says of this statement: "The above earnings are on the same mileage for both years, the earnings of the Kankakee & Seneca road being kept separate. The large increase in operating expenses this year is due to the extraordinary repairs and improvements made in the road-bed between Sunman and Lawrenceburg Junction. An estimate can be formed of the same when it is considered that in repairing, rebuilding and straightening the track along Tanners' Creek, requiring a change of location for a considerable portion of the distance, we have built 11,735 yards of masonry, 1,411 feet of combination bridges, removed over 50,000 cubic yards of earth, hauled and distributed 9,106 cars of gravel taken out of gravel-pit at Valley Junction, and transported 2270 cars of stone; no freight revenue on the above has been credited to earnings account. During the six months we have averaged five engines in service on construction and gravel trains at Tanners' Creek, for the use of which no charge has been made to the road department. This with our heavy traffic has kept us so short of motive power that we have worked our shops to their full capacity. The average charge to locomotive repairs during the three previous years (in the corresponding six months) has been about $30,000. This year it has been $65,000, of which sum $27,449.87 was for rebuilding five engines in addition to the usual ordinary repairs. The increased operating expenses occasioned by this extraordinary work on road-bed and bridges, as shown by the books, amounts to over $125,000. Deducting these extraordinary expenses from the operating account the net earnings would show over 5 per cent. on the capital stock for the six months over and above the fixed charges."

Cincinnati, New Orleans & Texas Pacific.—The Engineer has reported to the Cincinnati Southern Trustees favorably on the application made by this company, lessee of the Southern road, for the release of an additional $200,000 of the bonds given for betterments. The Engineer's report concludes with the following statement of the value of improvements made on the Cincinnati Southern Railroad by the lessee from Oct. 12, 1881, to Nov. 30, 1882:

First, repairing 18.18 miles of light steel and iron rails on main track with 60-lb. steel rail; second, 10.27 miles new sidings, with switches	$17,217.48
Frogs and fixtures	67,085.66
Ballast	34,179.48
Bridges and trestles	61,650.11
Filling trestles	29,130.72
Arching tunnels	74,031.77
Grading sidings, depot grounds	41,911.60
Buildings and water stations	63,268.46
Block signals	204.87
Engineering and superstructure	12,394.32
Percentage retained in contract	956.25
Total	$402,021.81

The Trustees directed a copy of the report sent to the Trustees of the Sinking Fund, with request and authority to surrender the $200,000 additional bonds as asked for by the company.

Danville, Olney & Ohio River.—Mr. Charles Howard, of Boston, has been appointed Receiver. It is understood that he was favored by a majority of the bondholders.

Des Moines, Osceola & Southern.—This road is now completed to Davis City in Decatur County, Ia., 29 miles southward from the late terminus at Osceola, and 70 miles from Des Moines. It is said that the road will be extended to St. Joseph, Mo.

Flint & Pere Marquette.—The lumber branch which is now in operation from Coleman, Mich., northward 3½ miles, is to be extended to Gladwin, 18 miles from Coleman. Work on the extension will soon be begun.

Galveston, Houston & Henderson.—The following circular from W. H. Harding, President, is dated Jan. 1: "In accordance with existing arrangements, the railroad and property of the Galveston, Houston & Henderson Railroad Co., of 1872, will, on and after this date, be controlled and managed by the International & Great Northern Railroad Co. The heads of departments and employés will report to the proper officers of the Missouri-Pacific Railway Co., lessees of the International & Great Northern Railroad, for further instructions."

Galveston, Sabine & St. Louis.—This company has been organized with a capital stock of $4,500,000 to build a railroad from Galveston to a suitable point on Red River in Grayson County; also a line from a point in Shelby County, on the main line, to and through Harrison County, to the state line. The office is at Longview, Texas.

Gulf, Colorado & Santa Fe.—Track is now all laid on the Houston Branch which leaves the main line at Alvin Junction, 24 miles from Galveston, and runs northwest to Houston, Tex., 29 miles. This completes a second line from Galveston to Houston, only 3 miles longer than the Galveston, Houston & Henderson road. Two miles of this track were laid this year.

Hartford & Harlem.—There has been much talk over this new line and its projectors. From the names which appear in the list of corporators it seems probable that there is really an intention of building the road, and that it differs from the projects which are prepared nearly every year for the purpose of selling out to the New Haven road. The organization of a parallel road has been a source of regular income to certain Connecticut men, and people along the line are somewhat slow to believe in the good faith of a new company. The real object is not yet apparent, some persons claiming that it is a New York & New England project, while others say that the projectors have gone into the line because they believe that a new road can be built and make money. The projectors have as yet given no further indication of their intentions.

Indiana, Illinois & Iowa.—A suit has been begun in the Circuit Court in Chicago to compel this company to issue bonds to holders of the old Plymouth, Kankakee & Pacific, in accordance with an agreement which, it is claimed, was made prior to the sale of the old company's property under foreclosure.

Kansas City & Gulf Short Line.—This road is reported finished from Jacksonville, Tex., on the International & Great Northern road, south by east to Rusk, 15 miles. It replaces a tramway, worked by mule-power, which was built several years ago.

Kansas City, St. Joseph & Council Bluffs.—The branch from Forest City, Mo., west by north to the Missouri River opposite Rulo, Neb., about 9 miles, is completed. Connection is made by ferry with the Atchison & Nebraska at Rulo.

Kennebunk & Kennebunkport.—The contract for building this road has been let to Libbey & Shannahan, of Portland, Me., who have already begun work. The line is from Kennebunk, Me., on the Boston & Maine road, to Kennebunkport, 4½ miles.

Kentucky Central.—On Jan. 1 this company took formal possession of the Richmond Branch, from Richmond Junction, Ky., to Richmond, 34 miles, which it bought from the Louisville & Nashville some time ago.

Kingston, Walesca & Gainesville.—This company has been organized to build a railroad from Gainesville, Ga., on the Atlanta & Charlotte Air Line, west to Kingston on the Western & Atlantic road, crossing the Marietta & North Georgia at Canton. It will be about 70 miles long, running through the mineral region of the state.

Lancaster.—It is understood that the bondholders of this road have served a notice of foreclosure on the road, and further that application has been made to the Court for permission to sell the property. This line, which has never been used, although built a number of years ago, runs from Hudson, Mass., to Lancaster. It is understood that there is some talk of extending the road as far as Clinton, and from there continuing on to Fitchburg, the object being to make a competing line between Boston and Fitchburg *via* the Massachusetts Central, which now passes through Hudson.

Little Rock & Fort Smith.—This company reports sales of land in December amounting to $26,947, against $17,700 in December, 1881. During December the trustees bought and canceled $53,000 first-mortgage bonds, making $145,000 canceled during the year, and $258,000 in all up to Dec. 31, 1882.

Long Island.—A company has been organized to build a line from this company's Sag Harbor Branch at Bridgehampton, N. Y., to Fort Pond Bay, near Montauk Point, where it is proposed to establish a port for Trans-Atlantic steamships.

Louisville, Evansville & St. Louis.—An old rumor has been revived to the effect that a controlling interest in this road has been sold to parties in the interest of the Chesapeake & Ohio.

Markesan & Brandon.—This road is now completed to the town of Markesan, Wis., 12 miles westward from the junction with the Chicago, Milwaukee & St. Paul at Brandon. A formal opening took place Jan. 4.

The road has passed under the control of the Chicago, Milwaukee & St. Paul Co., and will be operated as a branch line of the Northern Division.

Massachusetts Central.—The Boston *Advertiser* of Jan. 5 says: "A meeting of the board of directors of the Massachusetts Central Railroad was held yesterday afternoon, to discuss plans for the readjustment of the company's financial affairs. No formal action was taken, as not all the board was present, but a general discussion of one or two plans was had. Not only is the completed portion of the line the poorest portion, as regards business offered, but it also gives the company such a short haul for freight that the percentage to the Boston & Lowell uses up a large part of the receipts. On this account, and also because a large amount of the work done has been scattered along the whole length of the road, with unfinished gaps between, an early completion of the main line to Northampton is a necessity, if the security-holders are to realize anything on their investment. The company has $3,500,000 of stock and $3,500,000 of bonds outstanding, and from $1,500,000 to $2,000,000 will be required to complete and equip the road. This money must either be raised within the organization, or outside capital must be secured. The alternative, therefore, presents itself to the bondholders, either to allow a new mortgage to be placed upon the road, which shall be a first lien on the property and for which bonds can be issued to raise the money to complete and equip the road, accepting in lieu of their bonds either second-mortgage bonds or preferred stock, or to foreclose their mortgage and take the road. The latter proposition, it is believed, they would not accept, as, if sold now, the property would realize comparatively little, while there would be a very good prospect that the road, if completed, would earn enough to pay the fixed charges on the amount of bonds required to complete it, and have a surplus for dividends on the preferred stock. Some of the bondholders are understood to favor the exchange of their securities for second-mortgage bonds, as in that case they would have a remedy against the road in case of failure to receive their interest thereon, while the bonds would also be more available as collateral on which to raise money than preferred stock. On the other hand, there would be doubt of the ability of the road to earn enough to meet the fixed charges on both classes of bonds. It has also been suggested that the consolidation of the Massachusetts Central with some other line and the creation of a joint mortgage would offer greater inducements to investors than the issue of new bonds on the Massachusetts Central alone, and the proposition has been informally made by some of the managers of the Poughkeepsie, Hartford & Boston Railroad, which runs from Poughkeepsie to Ancram, N. Y., near the intersection of the state lines of Massachusetts, Connecticut and New York, to President Aldrich, of the Massachusetts Central, that the latter road shall be extended from Bondville, through Holyoke, Westfield and Great Barrington, to the state line, there to meet an extension of the Poughkeepsie, Hartford & Boston, and that a consolidation of the two roads shall be effected under one management. With a view to this possible contingency, the Massachusetts Central, some time ago, filed notice with the Secretary of State of its intention to apply for such an amendment of its charter as will permit of such extension. The Poughkeepsie, Hartford & Boston is the present outcome of the magnificent Poughkeepsie Bridge scheme of a few years ago, in which the late Mayor Eastman of that city was so prominent, but it has little present earning power, starting as it does from Poughkeepsie and running northeastward to no particular connection. At present the matter has no tangible form, though two or three informal conferences have been held. Another meeting of the Massachusetts Central directors will be held in a few days, at which it is expected some plan for the reorganization of the finances will be formulated and presented to the security holders for their action."

Mississippi Valley.—The contract for a section of 28 miles of this road from Port Gibson, Miss., southward, has been let to Thomas F. Duffin & Co., who will begin work at once.

Missouri Pacific.—The Galveston, Houston & Henderson road is added to this company's system from Jan. 1, being attached to the International & Great Northern Division. The road has been for some time controlled in the Missouri Pacific interest.

Nashville & Florence.—Proposals will be received at the office of James T. Craik, Superintendent and Chief Engineer of this road, in Columbia, Tenn., until Jan. 15, for the clearing and grading of the road-bed from Lawrenceburg, Tenn., to the north line of Lawrence County, a distance of 15 miles. Bids will be received for the whole work, or for sections of one mile or more.

Nashville & Tuscaloosa.—The Nashville & Tuscaloosa Railroad has been completed to Duck River, Tenn., by the Nashville, Chattanooga & St. Louis Railway Company under a contract, which has now come to a close and the road is transferred by deed to the latter company. The track has been extended from Graham (25.5 miles from the the junction at Dickson) to the north bank of Duck River (33.71 miles from Dickson), 8.2 miles of new track. A new contract has been entered into for the further extension of the road by the same company to the the Lewis County line, 13.5 miles. The masonry of the bridge over Duck River is well under way and Geo. M. Fletcher & Co. have signed a contract to complete the road to the Lewis County line by July 1, 1883. The work has been completed under the supervision of Mr. E. F. Falconnet, Engineer in charge.

New Castle & Salamanca.—This company has filed articles of incorporation for a railroad from Wampum, Pa., to a point on the New York state line near the Allegheny River. The distance is 130 miles, and the line is apparently intended to be a branch or extension of the Pittsburgh & Western road.

New York & New England.—The Governor of Massachusetts has approved an agreement between the Harbor and Land Commissioners and the New York & New England Railroad, acting for the Boston & Albany Railroad, concerning the South Boston flats, released to the former road by the Albany July 15, 1880. The agreement is in effect that the total sum of money due the commonwealth from the New York & New England is $100,000, with interest at 5 per cent. from May 1, 1882; this sum, with the interest, to be paid before or at the expiration of 10 years from that date, the commonwealth agreeing to accept, in lieu thereof, a conveyance of 1,976,654 feet of land bounded by Congress and B streets, land of the Boston Wharf Co., Fort Point channel, and the 25-acre lot, so called, this conveyance to be subject to any rights which the city of Boston may have acquired in Eastern avenue or Congress street. The New York & New England road is to do all the filling and other work which the commonwealth is entitled to have performed by the Boston & Albany road, and to complete the wall on Pier No. 4 in such a way as shall be approved by the Harbor and Land Commissioners.

New York, New Haven & Hartford.—At the annual meeting, Jan. 10, resolutions were passed approving the purchase of a controlling interest in the Hartford & Connecticut Valley road.

Mr. Goodwin, of East Hartford, who is the disturbing element at this company's meetings, criticised the accounts pretty sharply. He also urged the policy of reducing fares to 2 cents per mile, but failed to find support.

New York, Ontario & Western.—Track is reported laid on the extension of the Middletown, N. Y., eastward 25 miles to Cornwall on the Hudson, where connection is made with the New York, West Shore & Buffalo road.

New York, Pennsylvania & Ohio.—A dispatch from London, England, Jan. 8, says: "Lord Bury and Messrs. J. C. F. Lee and John Taylor (who were nominated for voting trustees, but defeated, at the meeting of the bondholders of the New York, Pennsylvania & Ohio Railroad on Dec. 21), have addressed a circular to the bondholders and shareholders, accompanied by a report on the result of the recent polling, alleging that Mr. C. E. Lewis, M. P., the chairman of the meeting, set aside the regulations ordinarily adopted in such cases, and by rejecting one of the scrutineers of the opposition party, and claiming for himself the casting vote, secured the decision of all the disputed points in his own favor."

North Carolina Railroad Commission.—A bill introduced in the North Carolina Legislature last week provides for the appointment of a railroad commission of three members with power to supervise rates and to prevent discrimination and excessive charges. It is somewhat similar to the Georgia law. It is said to stand a very good chance of passing, but will probably receive many amendments.

Northern Pacific.—The extension from Kalama to Portland, Or., will be 39 miles long. In the construction there will be 475,000 cubic yards of excavation, 45,000 yards of rock work, about three miles of trestle, one short truss bridge over Miller Creek, and 270 acres of clearing. Its cost will approximate $1,000,000. It is expected that the link will be finished and ready for traffic about the middle of next November. Inclines will be built at Kalama and at the terminus of the Portland Branch on the opposite side of the Columbia, and cars will be transferred by an iron ferry boat, now in the course of construction in New York, under the supervision of Chief Engineer J. C. Henderson. It will be shipped in sections, by rail or ocean, and put together at Portland. Its capacity will be 20 cars.

The Helena (Montana) *Herald* says: "Col. J. T Dodge, Engineer of the Rocky Mountain Division of the Northern Pacific, is back from the scene of winter activities on the belt range east of Bozeman. Work on several of the cuts still unfinished is retarded by the frozen condition of the ground, and the cost of the excavations and fills is largely increased. The grades, nevertheless, are making a certain amount of progress daily, and the tracklayers, who are again called out from their brief rest in camp, are putting down the rails west of Hoppers, and next week will put the end of the track at Muir, 13 miles from Bozeman. Between these points, across the divide, sufficient snow has fallen for good sleighing, and the large number of teams employed in hauling ties and timber are using runners. It is expected next month to get the track across the summit, and only cold and snow beyond that experienced there for this winter will serve to delay the advance to that extent. Before February ends, construction work will be wholly transferred to the Gallatin side of the range and trains admitted into Bozeman."

Pennsylvania Company.—Beginning with Jan. 1, all passenger trainmen on the Pennsylvania lines west of Pittsburgh are to appear, when on duty, in uniform. The following order has been issued from headquarters: "The company will furnish the first suit issued to an employé free. Renewals will be furnished by the Superintendent, on requisition, at original cost. Clean linen must also be worn. The caps, coats and badges will be worn only while on duty, which is from the time of preparing to take charge of trains until relieved at the end of the trip. The coats must be kept buttoned and the caps worn straight. The cap cover must be worn only when, from rain, fog or snow, the cap may become discolored."

Philadelphia & Reading.—The plan of adjustment of the company's affairs is fully set forth in the accompanying circular, issued in Philadelphia last week:

"For the purpose of retiring existing indebtedness, the company will create an obligation, to be called convertible adjustment scrip, for $4,000,000, dated Jan. 1, 1883, payable in five years, with the option to the company of anticipating payment on and after the expiration of 2½ years, at any semi-annual interest payment, on giving 90 days' public notice thereof. The said scrip will be issued in denominations of $1,000, $100, $25, and $10, all bearing interest at 6 per cent. per annum, with semi-annual coupons attached, payable July 1 and Jan. 1; and until within six months of its maturity, or until public notice as above is given of the intention to anticipate payment, the principal will be convertible into the common stock of the company at par. The issue will be further secured by a deposit, as collateral security, of an equal amount of income mortgage bonds with Edwin M. Lewis, the trustee of the mortgage, under a proper deed of trust, authorizing the sale of the collateral for the benefit of the scripholders upon default existing for 90 days, either in the payment of the interest or principal of the scrip.

"Notice is hereby given to the holders of the undermentioned obligations that on and after Jan. 16, 1883, they will be entitled to make the exchanges and conversions following:

"The principal of the deferred coupon dollar scrip may be converted at par into the convertible adjustment scrip above mentioned, and, upon such conversion being made, the accrued interest to Jan. 1, 1883, will be paid in cash.

"Holders of convertible bonds will be entitled to receive $10 in cash and $200 of the first series 5 per cent. consolidated mortgage bonds, bearing interest from Nov. 1, 1882, for each $1,000 bond, and a proportionate amount for $500 and $100 bonds, in exchange for the six coupons of the convertible bonds maturing from July 1, 1882, to Jan. 1, 1885, inclusive, retaining the right of conversion into stock now held under the said bonds, irrespective of the funding of the above coupons, and without the surrender of any of the 5 per cent. bonds issued in respect thereof.

"Fractional scrip for first series 5 per cent. consolidated mortgage bonds will be issued for amounts less than $500, convertible into the bonds when presented in amounts of $500 or multiples thereof.

"Holders of debenture bonds of the Railroad Co. will be entitled to convert the principal ex all coupons maturing to July 1, 1883, inclusive, into second series 5 per cent. consolidated mortgage bonds, bearing interest from Feb. 1, 1883, and to receive convertible adjustment scrip for all coupons maturing to July 1, 1883, inclusive.

"Holders of debenture bonds of the Coal & Iron Co. will be entitled to convert the principal ex all coupons maturing to Sept. 1, 1883, inclusive, into second series 5 per cent. consolidated mortgage bonds, bearing interest from Feb. 1, 1883, and to receive convertible adjustment scrip for all coupons maturing to Sept. 1, 1883, inclusive.

"Holders of any divisional mortgage bonds of the Coal & Iron Co. will be entitled to convert the principal into first series 5 per cent. consolidated mortgage bonds, bearing interest from Nov. 1, 1882, at par, and to receive convertible adjustment scrip for all accrued interest up to and including Jan. 1, 1883.

"Holders of Schuylkill Navigation Co.'s 6 per cent. improvement bonds due 1880 ($228,000), will be entitled to receive $1,000 in first series 5 per cent. consolidated mortgage bonds, bearing interest from Nov. 1, 1882, and $50 in cash for each $1,000 of said bonds, and to receive cash for all accrued interest on said bonds to Nov. 1, 1882.

"Holders of Schuylkill Navigation Co.'s 6 per cent. mortgage loan, 1870-1895 ($1,200,000), will be entitled to exchange them at par ex January, 1883, coupon for second series 5 per cent. consolidated mortgage bonds, bearing interest from Feb. 1, 1883, at par, and to receive with each $1,000 bond the sum of $5 in cash for the interest for the month of January, 1883.

"At the next annual meeting of the Schuylkill Navigation Co. a proposition will be submitted to the shareholders of the said company for the conversion of their shares into the common stock of the Philadelphia & Reading Railroad Co. at a rate of exchange then to be named.

"Holders of bonds of the Susquehanna Canal Co. may convert the principal and all accrued interest to Feb. 1, 1883, into second series 5 per cent. consolidated mortgage bonds at par, bearing interest from Feb. 1, 1883. Fractional scrip for second series 5 per cent. consolidated mortgage bonds will be issued for amounts less than $500, convertible into the bonds when presented in amounts of $500 or multiples thereof

"At the next annual meeting of the Susquehanna Canal Co. a proposition will be submitted to the shareholders of the said company for the conversion of their shares into the common stock of the Philadelphia & Reading Railroad Co., at a rate of exchange then to be named.

"Holders of Colebrookdale bonds may convert them at par ex December, 1882, coupon into second series 5 per cent. consolidated mortgage bonds, bearing interest from Feb. 1, 1883, at par, receiving for each $1,000 bond the sum of $8.33 in cash, representing the accrued interest from Dec. 1, 1882, to Feb. 1, 1883, at the rate of 5 per cent. per annum.

"Holders of Pickering Valley bonds will be entitled to convert the principal ex Oct. 1, 1882, coupon at par into second series 5 per cent. consolidated mortgage bonds, bearing interest from Feb. 1, 1883, at par, receiving with each $1,000 bond the sum of $16.67 in cash, as representing the interest from Oct. 1, 1882, to Feb. 1, 1883, at the rate of 5 per cent. per annum."

At the annual meeting, Jan. 8, the old board was re-elected without opposition. A rumor gained considerable currency that Mr. Gowen would shortly retire, and that he would be succeeded by a man to be named by Mr. Vanderbilt. These reports have since been denied, how truthfully it is difficult to say.

At the annual meeting resolutions approving the report and referring it to the incoming Board of Managers were agreed to.

Resolutions were adopted, that the various actions, contracts, agreements and engagements entered into by the board of managers, referred to in the report, including the execution of the 5 per cent. consolidation mortgage and the issue of the bonds thereunder, the execution of a contract with the New York, Central & Hudson River Railroad Co., the Geneva & Lyons Railroad Co., the Syracuse, Geneva & Corning Railway Co., the Corning, Cowanesque & Antrim Railway Co., the Fall Brook Coal Co., the Jersey Shore, Pine Creek & Buffalo Railway Co., and the Philadelphia & Reading Coal & Iron Co., and the guarantee of the $3,500,000 bonds issued by the said Jersey Shore, Pine Creek & Buffalo Co., the execution of a contract between the Philadelphia & Reading Railroad Co., the Philadelphia & Reading Coal & Iron Co., the Pittsburgh, McKeesport & Youghiogheny Co., the Pittsburgh & Lake Erie Co., the Lake Shore & Michigan Southern Co., and the South Pennsylvania Co., the issue of $4,000,000 convertible scrip, the sale of $5,000,000 7 per cent. general mortgage bonds, and the financial scheme for the funding and conversion of the various junior securities and scrips of the company be ratified and approved.

It was also resolved "that the report of Frank S. Bond, President, and George F. Tyler, Samuel R. Shipley, John S. Newbold, Edward T. Steel, Charles Parrish, and John Lowber Welsh, managers, for the year ending Nov. 30, 1881, submitted at the last annual meeting of the company and then referred to the incoming board for further action, be and the same is hereby rejected by the shareholders."

Pittsburgh & Lake Erie.—At the annual meeting, Jan. 8, the stockholders voted to ratify the traffic contract with the South Pennsylvania Co. The old management was re-elected, although there were reports that it would be displaced.

The Pittsburgh *Telegraph* of Jan. 8 says: "A number of sensational stories have been printed about this election. The only new matter in connection with the road was the purchase of 6,000 shares of stock on Saturday by Vanderbilt from Harry W. Oliver. Mr. Oliver sold 4,300 shares for himself and 1,700 shares for a number of glass and iron manufacturers. The price paid was $150 a share or $900,000, Mr. Oliver clearing $300,000 for himself and $119,000 for others in the pool. This gives Vanderbilt control of 12,000 shares of stock."

Pittsburgh, McKeesport & Youghiogheny.—The Pittsburgh *Telegraph* of Jan. 6 says: "The proposed branch of the Pittsburgh, McKeesport & Youghiogheny leading up the Monongahela from McKeesport, is a fixed fact, and the work of construction will be commenced early in the spring. The line has been surveyed and parties are now engaged securing the right of way. Boarding houses are being constructed and everything will be in perfect readiness by the time the weather will permit work to be commenced. The road is located as far as Cheat River and the intention is to extend it on to the Virginia iron, timber and coal fields and to finally connect with one of the Southern systems of roads. A capitalist who is deeply interested in the enterprise says work will not be commenced at once, as has been stated, but all the preliminaries will be completed during the winter, so there will be nothing to interfere with the work when once begun."

Rochester & Ontario Belt.—The Rochester (N. Y.) *Democrat and Chronicle* says of this company's proposed bridge over the Genesee River in that city: "It is proposed to cross the river about 100 ft. south of the lower falls, at the mouth of Deep Hollow. The west entrance to the bridge will be about 150 ft. south of Rowe street, and will strike the bank of the river on the east side 150 ft. north of Avenue B. The bridge itself will be what is known as a double-deck, pin-connected truss bridge, and will be 800 ft. long, the upper deck being for a single track railway and the lower deck to be used as a double track highway, with side walks on the outsides. The bridge will consist of six spans resting on three iron towers, which in turn rest on stone piers built on the solid bed of the river and the slope of the river bank. There will be two river spans of 140 ft. each, two of 130 ft. each and one of 110 ft. The approaches for the highway traffic will be from Rowe street along the bank of the river to the west portal, and from Avenue B along the bank of the river to the east entrance. The foot-path will overhang the river on outrigging, and will be ornamented with a guard to prevent the possibility of accident. From the bed of the river to the top of the rail the height will be 130 ft. The railway will cross Lake avenue and St. Paul street overhead by iron bridges which will make a clear span of the street, having no supports to interfere with street traffic."

Rochester, Rensselear & St. Louis.—This company has been organized to build a railroad from Rochester, Ind., to Gilman, Ill., about 100 miles.

St. Louis & San Francisco.—Track has been laid on the south side of the Arkansas River from a point opposite Van Buren, Ark., to Fort Smith, six miles, and the road is announced as open to Fort Smith, which is 135 miles from the main line at Plymouth, Mo., and 420 miles from St. Louis. The bridge over the Arkansas is not completed, and the transfer at Van Buren is made by ferry.

San Luis Obispo & Santa Maria Valley.—This road has recently been extended from the late terminus at Santa Maria, Cal., south by west to Los Alamos, 15 miles. It is now 57⅛ miles long, from Port Harford to Los Alamos. The road is owned by the Pacific Coast Steamship Co., which is one of the corporations controlled by the Oregon Improvement Co. The extension to Los Alamos is the beginning of the line to Santa Barbara.

Sharpsville.—A contest for the control of this road is going on, Mr. Wm. L. Scott, of Erie, Pa., having attempted to secure a controlling interest in the stock, which is resisted by other owners. The fight now turns, it is said, upon a block of 414 shares, the title to which is at present in litigation, both parties claiming them. Mr. Scott's object in securing the road is to complete his control over the lake coal trade through Erie, with which this road interferes, as it is the only line serving the bituminous mines in that region which is not under contracts with Mr. Scott.

South Carolina Railroad Charters.—The Legislature of South Carolina at its recent session passed the following charters:

Barnwell, from Blackville to Barnwell Court House. This is a short local line, on which there is already, we believe, a wooden road operated by horse power.

Bishopville, to run from Bishopville to the North Carolina line. This is a short local road, probably intended to connect with the Carolina Central.

Green Pond, Walterboro & Branchville, a local line to connect with the South Carolina road at Branchville.

Greenville & Port Royal, to run from Greenville to Port Royal. This is a large project, with very little chance of being built.

Mt. Pleasant, to run from Mt. Pleasant to Little River, with a ferry thence to Charleston; a short local line.

Palmetto, to run from the North Carolina line across the state to the Georgia line in Aiken or Edgefield County. This seems to be an indefinite sort of project and likely to remain on paper.

Spartanburg, Aiken & Port Royal, to run from Spartanburg to Aiken and thence to Port Royal, part of it on nearly the same line as the Greenville & Port Royal. This seems to be a wholly unnecessary line, not at all likely to be built.

Union, Gaffney City & Rutherfordton, from Rutherfordton, N. C., to Port Royal. Another ambitious project, not likely to reach completion.

Southern Pacific.—Track on the Mohave Branch is now laid for 45 miles eastward from the late terminus at Calico, Cal., and 125 miles from the main line at Mohave station. About 115 miles remain to complete the line to the Colorado River, where connection will be made with the Atlantic & Pacific road.

Susquehanna & Southwestern.—This company has been reorganized, the Vanderbilt interest now controlling the management. It is stated that work will be begun at once on the line from a junction with the Jersey Shore, Pine Creek & Buffalo into the Clearfield coal region in Pennsylvania.

Syracuse, Phœnix & Ontario.—This company has filed articles of incorporation to build a railroad from Syracuse, N. Y., by Phœnix to Oswego, a distance of about 35 miles. It is a reorganization of the old Syracuse, Phœnix & Oswego Co., which graded part of the line some years ago.

Texas & St. Louis.—The St. Louis *Republican* of Jan. 4 says: "The Texas & St. Louis Railway Co. yesterday closed a contract with the Southern Express Co. to do the express business on the line in Missouri, Arkansas and Texas. The road will not therefore conduct a business of that kind on its own account. The agreement is to last for three years, and, under the terms, at the expiration of that time the railroad company, if the officers desire, can refuse to renew the contract."

Troy & Greenfield.—In December there passed eastward over this road and through the Hoosac Tunnel 6,596 loaded and 215 empty cars, a total of 6,811 cars, being an increase of 8 per cent. over December of last year.

York Beach.—Arrangements have been made to build a narrow-gauge road from Portsmouth, N. H., to York Beach, Me. The cost is estimated at not more than $100,000, including equipment, and a large part of this amount has been promised. It has not been settled whether the road shall be of 2 ft. or 3 ft. gauge. It will be used chiefly for summer travel.